A STUDY TO ASSESS THE EFFECTIVENESS OF PRONE POSITION ON OXYGEN SATURATION AMONG PRETERM BABIES IN SELECTED HOSPITAL, CHENNAI, TAMILNADU

A DISSERTATION SUBMITTED TO THE TAMILNADU
Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI,
IN PARTIAL FULFILLMENT FOR THE DEGREE OF

MASTER OF SCIENCE IN NURSING

CHILD HEALTH NURSING

BY

301617553

SRESAKTHIMAYEIL INSTITUTE OF NURSING AND RESEARCH
(JKK NATTRAJA EDUCATIONAL INSTITUTIONS)
KUMARAPALAYAM (PO),
NAMAKKAL DISTRICT – 638 183.

OCTOBER – 2018

A STUDY TO ASSESS THE EFFECTIVENESS OF PRONE POSITION ON OXYGEN SATURATION AMONG PRETERM BABIES IN SELECTED HOSPITAL, CHENNAI, TAMILNADU

BY

301617553

Research Advisor: **....……**

Dr. Mrs. R. JAMUNARANI, M.Sc (N)., Ph.D.,
Principal,
Sresakthimayeil Institute of Nursing & Research,
(JKK Nattraja Educational Institutions)
Kumarapalayam, Namakkal District.

Clinical Specialty Advisor: ……

Mrs. P. BEULAH, M.Sc., (N)., PGDSH,
Professor,
HOD, Child Health Nursing,
Sresakthimayeil Institute of Nursing & Research,
(JKK Nattraja Educational Institutions)
Kumarapalayam, Namakkal District.

A dissertation submitted in partial fulfillment of the requirement for the Degree of Master of Science in Nursing to The Tamilnadu Dr. M.G.R Medical University, Chennai.

OCTOBER – 2018

CERTIFIED THAT THIS IS THE BONAFIDE WORK OF

301617553

AT SRESAKTHIMAYEIL INSTITUTE OF NURSING AND RESEARCH

(JKK NATTRAJA EDUCATIONAL INSTITUTIONS)

KUMARAPALAYAM (PO),

NAMAKKAL DISTRICT – 638 183.

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING TO THE TAMILNADU Dr. M.G.R MEDICAL UNIVERSITY, CHENNAI-32.

EXAMINERS:

1. ……..

2. …….

DECLARATION

I, 301617553, hereby declare that this dissertation entitled "**A STUDY TO ASSESS THE EFFECTIVENESS OF PRONE POSITION ON OXYGEN SATURATION AMONG PRETERM BABIES IN SELECTED HOSPITAL, CHENNAI, TAMILNADU"** has been prepared by me under the guidance and direct supervision of **Dr. Mrs. R. JAMUNARANI, M.Sc., (N), Ph.D., Professor cum Principal, and Mrs. Mrs. P. BEULAH, M.Sc., (N)., PGDSH, Professor cum HOD, Department of Child Health Nursing,** Sresakthimayeil Institute of Nursing and Research, (J.K.K. Nattraja Educational Institution), KUMARAPALAYAM, Namakkal District as the requirement for partial fulfillment of **MASTER OF SCIENCE IN NURSING** degree under **THE TAMILNADU Dr.M.G.R. MEDICAL UNIVERSITY, CHENNAI – 32.** This dissertation has not been previously formed and this will not be used in further for award of any other degree/ diploma. This dissertation represents independent work on the part of the candidate.

Place : Kumarapalayam
Date : October 2018

301617553
II year M.Sc. Nursing Student
SRESAKTHIMAYEIL INSTITUTE OF NURSING AND RESEARCH
(J.K.K. Nattraja Educational Institution)
KUMARAPALAYAM,
NAMAKKAL DIST.- 638183

ACKNOWLEDGEMENT

I will say of the LORD He is my refuge and my fortress:
my God; in him will I trust - Psalm 91:2

First, I thank **God Almighty** for His grace and blessings to successfully complete this study.

I express my thanks to **Tmt.N.SENDAMARAI,** Chairperson, and Our Managing Director **Mr. OMM SARAVANA,** for their support during this study.

I would like to pay special thanks, warmth and gratitude to **Dr.Mrs.R.JAMUNARANI, M.Sc., (N), Ph.D.,** Principal for her worthwhile guidance and encouragement which pushed me to achieve my goal.

I offer my sincere thanks to **Mrs. P. BEULAH, M.Sc., (N)., PGDSH, Professor, Department of Child Health Nursing,** my teacher and guide who supported me in every bit with valuable suggestions and without whom it was impossible to accomplish the research paper.

I acknowledge with thanks **Prof. DHANAPAL, M.Sc., Senior Statistician,** for his advice in statistical analysis.

I would not forget to remember thanks to **ALL TEACHING AND NON TEACHING STAFF** of Sresakthimayeil Institute of Nursing and Research, Kumarapalayam for their constant encouragement throughout the study.

I wish to express grateful thanks to **Dr.E.PADMAPRIYA, MBBS, DCH, DNB (Pediatrics), MNAMS,** Senior Consultant – Neonatology, SRM Institutes for Medical Science, Chennai for allowing me to conduct my study and validating the tool and whole hearted support and encouragement.

I wish to express grateful thanks to **Dr.G.MAHESWARI, M.Sc., (N),** Reader, Dhanvantri College of Nursing, Pallakkapalayam for validating the tool and support during my study.

I wish to express grateful thanks to **Mrs.S.INDIRA, M.Sc., (N),** Vice Principal, Anbu College of Nursing, Komarapalayam for validating the tool and support during my study.

I am greatly indebted to my Beloved Husband **Mr.SEBASTIN ANANTHARAJ,** my Parents **Mr.A.SOLAIAPPAN and Mrs.S.PONNUTHAI** for their never ending love, faith, support and encouragement throughout the study.

I extended my thanks to my mentor **Dr.SUNDARI EDWIN, M.Sc., (N), Ph.D.,** for her moral support to complete the study.

I extend my gratitude to the library staff and office staff for their kind co-operation and assistance in building a sound knowledge basis for this study.

I convey my special thanks to the study participants for their co-operation and help during the study period.

My gratefulness extended to all those who have directly and indirectly helped me in the completion of this work.

I also wish to thank **Mr.V.Mohanraj, Space Digital Works, Vattamalai** for his support and helping me to complete data as a printing format.

"Above all, the investigators owe this success to Almighty"

301617553

ABSTRACT

Background: An infant whose birth weight less than 2500 g, regardless of their gestational age is called low birth weight infants. Reduction in infant and child mortality is a major goal of strategy to achieve health for all. The major contribution of infant death is by a neonate which is a serious concern, since nearly 5 million neonates die each year in the world of which 96% are in the developing countries, effective reduction of such high neonatal death rate remains a major global challenge in 21st century. The investigator, through self experience analysed the need for implementing the different positions that may be favourable to the preterm babies with low cost. The findings of this experiment may also be adopted in settings with lesser facilities. These viewpoints motivated me to experiment to find the best position which provides good heart rate, respiratory rate and oxygen saturation for preterm babies. **Statement of the problem:** A study to assess the effectiveness of prone position on oxygen saturation among preterm babies in selected hospital, Chennai, Tamilnadu. **Objectives:** (1) To assess and compare the pretest and post test level of oxygen saturation among preterm babies in study and in control group. (2) To determine the effectiveness of prone position on the level of oxygen saturation among preterm babies in study group. (3) To associate the post test level of oxygen saturation among preterm in study and control group with their selected demographic variable. **Research design:** In this present study experimental research design was selected. **Setting:** The present study was conducted in Neonatal intensive care unit SIMS Hospitals, Chennai. **Participants:** Total participants were 60 preterm babies in NICU. The experimental group 30 and control group 30 who met the inclusion criteria were selected.

Method: Sample was selected by non probability convenient sampling. The investigator introduced herself to the parents and developed a good rapport and made them to co operate with the study. After getting demographic data, pre- test was done with the help of the prepared tool. After the pre-test ,prone position was given for two hours and duly the period preterm babies assessed by using the same tool. Based on the collection data, effectiveness was found by comparing the prone &supine position data were analyzed by using Paired 't' test and chi square test. **Result:** Compares the respiratory rate between the prone and supine position. It shows there is a statistically significant difference ($p<0.05$) after 90 minutes of first day and second day 60 minutes onwards. Statistical significance was calculated using student independent t test. Compares the oxygen saturation between the prone and supine position. It shows there is a statistically significant difference ($p<0.01$) after first day 30 minutes onwards. Statistical significance was calculated using student independent t-test. A significant difference was found between physiological parameters of respiration prior to prone position and two hours after the intervention .The findings of this study indicated that prone position in respiratory distress had a favorable impact physiological parameters of respiration.

LIST OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

CHAPTER – I

INTRODUCTION

The littlest feet make the biggest footprints in our hearts.

Little hands and little feet, little toothless grins so sweet, little eyes that shine so bright , little arms to hug you tight. Everything's little, except your joy, when you have a new baby .A new baby is like the beginning of all things- wonder, hope, a dream of possibilities.

New born period is the most crucial period in a child's life. The most profound physiologic change required of the neonate is transition from fatal or placental circulation to independent respiration. The immediate adjustments includes respiratory system, circulatory system, thermoregulation, fluid and electrolyte balance, etc .All the systems are trying to adjust to extra uterine life.

A low birth weight infant means an infant whose birth weight is less than 2500 g, regardless of gestational age. Low birth weight infants are high risk Newborns, who has a greater-than-average chance of morbidity or mortality because of conditions or circumstances associated with birth and the adjustment to extra uterine existence.

Neonatal mortality in India accounts for 50% of all infant mortality, which has declined to 84/1000 live births. The common causes of neonatal mortality in our country are asphyxia, prematurity, low birth weight and infections. Improvement in neonatal care in India is needed in order to fulfil the National health policy to reduce

infant and perinatal mortality and low birth weight babies. Low birth weight accounts for 50-60% of perinatal and infant mortality.

Globally, infections, asphyxia and prematurity are the leading causes of neonatal deaths. A similar pattern is seen in India where they contribute 15% of the total neonatal deaths respectively. This accounts for nearly 25% of the total 3.9 million neonatal deaths worldwide. Respiratory distress is a challenging problem and medical emergency in the practice of pediatrics. It accounts for significant morbidity and mortality.

Three fourth of neonatal mortality in pre urban setting in Bangladesh was attributed to preterm neonates as compared to one third of low birth weight infants. Out of 1322 neonatal deaths, 65.4% were contributed by prematurity as a single cause of death over a three year period study in, India. In India, 26 million babies are born every year ,out of which 1.2 million die before completing the first four weeks of life.

Preterm is one the indicator of primary health care towards achieving health for all by 2000 AD. It is the most sensitive indicator for analyzing the risk to the survival of a baby, its health, growth and development.

The American academy of pediatrics (2009) recommends the prone position for preterm infants in first year of life as a preventive measure for sudden infant death syndrome. SIDS is the third highest cause of infant death in the neonatal period.

Prolonged supine positioning for preterm infants is not desirable, since they appear to lose their sense of equilibrium when supine and use vital energy in attempts to recover balance by postural changes. In addition prolonged supine positioning is associated with long-term problems such as decreased flexion of the limbs, pelvis and trunk; widely abducted hips etc.

Early in hospitalization, the prone position is best for preterm infants and result in improved oxygenation, better tolerated feedings, and more organized sleep-rest patterns. Infants exhibit less physical activity and energy expenditure when placed in the prone posit

Supine position has been consistently shown to increase nasal airway resistance and decrease nasal volume secondary to an increase in the volume of the capacitance vessels of the nose and the perfusion to the lungs also less in supine position .Prone position improves the ventilation and perfusion by improving the base to apex lung perfusion, reduces the abdominal pressure and compression from heart to the lungs.

Prone position is preferred for very low birth weight infants because it promotes development of pulmonary, cardiovascular, sleep state, and gastrointestinal functions and facilitates the preterm infants recovering from the respiratory complications associated with immaturity. In addition, the results of a systematic review suggested that prone position slightly improved the oxygenation in neonates undergoing mechanical ventilation. **(Monterosso.P. 2010).**

In Iran the study of **Salman Yazdi, et.al., (2013)** showed that prone position improves oxygenation in infants with respiratory distress who were receiving oxygen through a hood.

NEED FOR STUDY

An infant whose birth weight less than 2500g, regardless of their gestational age is called low birth weight infants. Reduction in infant and child mortality is a major goal of strategy to achieve health for all. The major contribution of infant death is by a neonate which is a serious concern, since nearly 5 million neonates die each year in the world of which 96% are in the developing countries, effective reduction of such high neonatal death rate remains a major global challenge in 21^{st} century.

Basic neonatal care is not available at majority of the centers where neonates are delivered and admitted. Low birth weight infants require specialized care in NICU. The national population policy of India aims at bringing down the infant mortality rate to 30 per 1000 live births by 2016.

The simple positioning of pre term babies may prevent these dangers to the neonatal life. Prone and head tilted up 45^0 positions are researched in improving the efficacy of oxygenation. Positioning of neonates is a simple and safe therapeutic maneuver with prompt and demonstrable benefit.

These viewpoints motivated me to experiment to find the best position which provides good heart rate, respiratory rate and oxygen saturation for pre term babies.

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of prone position on oxygen saturation among preterm babies in selected hospital, Chennai, Tamilnadu.

OBJECTIVES

1. To assess and compare the pretest and post test level of oxygen saturation among preterm babies in study and in control group.

2. To determine the effectiveness of prone position on the level of oxygen saturation among preterm babies in study group.

3. To associate the post test level of oxygen saturation among preterm in study and control group with their selected demographic variable.

HYPOTHESIS

H_0 : There is no significant effectiveness of prone position on oxygen saturation among preterm babies in a selected study group.

H_1 : There is significant effectiveness of prone position on oxygen saturation among preterm babies in a selected study group.

OPERATIONAL DEFINITION

1. Effectiveness

In this study effectiveness refers to the extent in which the change of body positions will produce an effect on the oxygen saturation, measured in terms of physiological parameters by a stethoscope**,** trunk movement observation and pulse oxymeter.

2. Position

In this study position refers to the placement of a preterm baby in prone position.

3. Prone position

In this study prone position refers to placement of a preterm baby on his/her abdomen with head turned to one side on an even surface..

4. Oxygen saturation

In this study oxygenation refers to the oxygen saturation in the neonatal blood as revealed by the readings of the pulse oxymetry.

5. Preterm baby:

In this study preterm is defined as babies born alive before 28 - 37 weeks completed.

ASSUMPTIONS

The study assumes that:

- Change of positions influence physiology of cardiovascular system and respiratory system.

DELIMITATIONS

The study is limited to,

- The respiratory distress preterm baby admitted to the NICU of the selected hospital.
- The study limited in six weeks
- The study limits to sample size 60

CONCEPTUAL FRAMEWORK

A frame work is a brief explanation of theory of those portions of theory which has to be tested in quantitative study. Conceptual frame work serves as a mind map for the work as well as a spring board for scientific advancements.

A theoretical frame work of reference that is a base for observations, definitions of concepts, research design, interpretations and generalizations. It provides the rationale for the predictions about relationship among variable in the research study. **(B.T.Basavanthappa, 2009)**

Ernestine weidenbach's theory

This study is aiming to find the deficiency of prone position to increase the physiological parameters of respiration among respiratory distress pre term babies. The basic concept of this study to improve the lung physiology of respiratory distress children. So the investigator has modified the Ernestine weidenbach's theory- a helping art. According to weidenbach's nursing practice consists of

identifying the people's need for help, ministering the needed help, and validating that the need for help was met.

Weidenbach's defined the art of nursing includes understanding patients need and concerns, developing goals and actions intended to enhance patient's ability and directing the activities related to the medical plan to improve the patient's condition.

Weidenbach's proposes a prescriptive theory for nursing which is described as a conceiving of desired situation and the ways to attain it. Prescriptive theory directs actions towards an explicit goal. It consists of these factors:

- Central purpose
- Prescription
- Realities

According to Wiedenbach's the nursing practice has three steps, they are:

Step 1: Identification

Identification involves individualization of the children. Here identified the Respiratory distress children's demographic data, physiological parameters of reception and need for increasing the oxygenation by alternative ways other than medication.

Step 2: Ministration

Ministration is providing the needed help. Here the detoriating lung compliance will be improved by prone position.

Step 3: Validation

Validation refers to a collection of evidence that shows Respiratory distress children's need have been met. Assessing the Physiological parameters of respiration by structured assessment tool and reassessment of parameters will be done to evaluate the effectiveness of prone position.

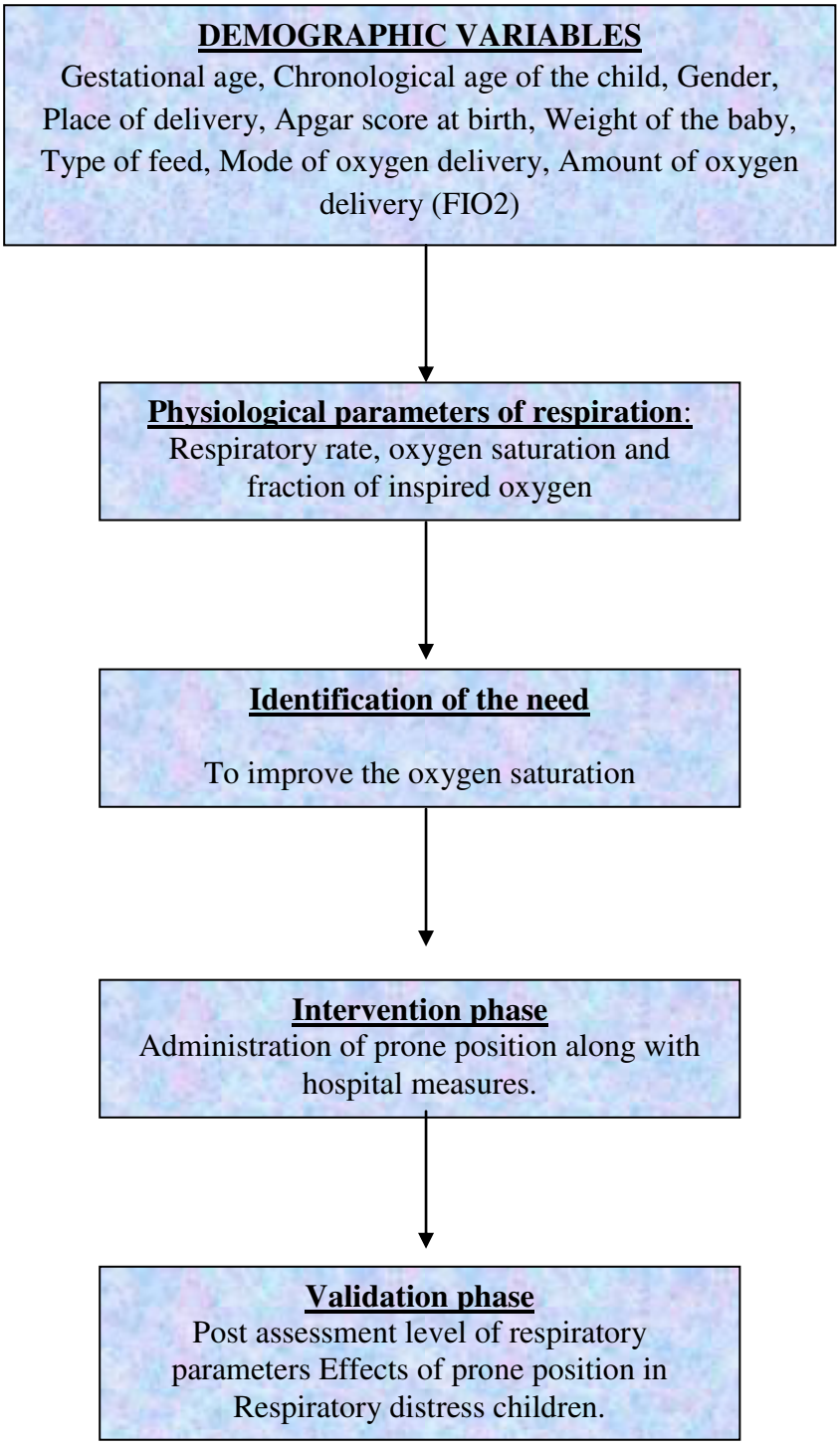


Fig. 1.1: CONCEPTUAL FRAME WORK BASED ON MODIFIED WIEDENBACH'S THEORY OF HELPING ART OF CLINICAL NURSING (1964)

CHAPTER – II

REVIEW OF LITERATURE

"A great literature is chiefly the products of imaging minds in revolt the immovable certainties of nation"

– Mecken, H.L

Review of literature in an essential step in the development of the research project. It further helps in developing the broad conceptual, construction of the tool and development of instructional module and analysis by data. **It is discussed under the following headings:**

1. Literature review related to preterm respiratory distress
2. Literature review of preterm oxygen therapy
3. Literature review related to effectiveness prone position on oxygen saturation

I. LITERATURE REVIEW RELATED TO PRETERM RESPIRATORY DISTRESS:

Chharisauparna, et.al., (2016) conducted a retrospective study at pediatric hospital in Rajasthan from May 2016 to July 2016, among 675 neonates in that 17.5% preterm babies and 82.5% were term neonates. Prevalence of respiratory distress in admitted neonates was 29.6% birth weight<1000 gms to 1499gms.

Maryam sabonate, et.al., (2015) conducted a cross sectional, descriptive analytical investigation was performed at the NICU ward with 78 preterm GA (<34 weeks). The result shows that among 42 cases (65.6%) with mean birth weight 1464.76+- to 1478.056 gm suffered from RDS.

Zhang et.al., (2015) did a case study on effects of exogenous pulmonary surfactant on mortality rate in neonatal respiratory distress syndrome pointed that 50% of incidence of RDS in preterm infants born before 30 weeks of gestation.

Zhonghuaereczazhi (2015) data were collected from preterm infants in department of NICU, Peking University third hospital, 99 preterm infants mean gestational age was (31.9 +_2.2) weeks and birth weight was (1.661+ 501)g. A retrospectively analysed, 69 infants were diagnosed with transient tachypnea of newborn and 30 were diagnosed with RDS.

Js Anadkat, et.al., (2012) conducted a study with in 12 hospitals north California by using a cohort study among 286-454 , 34 to 42 (GA) weeks preterm born babies with white race, ethnicity , The result shows that male sex and white race /ethnicity independently increase risk for RDS in late preterm and term infants.

Arjan B.Tepas, et.al., (2010) did a case control study on early respiratory management of respiratory distress syndrome among very preterm infants .Samples were selected with the gestational age of 25-32 weeks. They were supported with early Nasal continuous positive airway pressure but it was failed and intubated within 72 hours after birth. Twenty five newborns were selected whereas 50 babies were included in the delivery room intubation (DRI) group. The result shown that the incidence of Broncho pulmonary Dysplasia was significantly lower in the Nasal CPAP group than in the DRI group P<0.004.

II. LITERATURE REVIEW RELATED TO NEWBORN OXYGEN THERAPY:

Jennifer Myhree, et.al., (2016) conducted a prospective randomized study among 118 preterm (<37 weeks) diagnosed with RDS in the AIC Kijabe hospital, Kenya , introduced o2 therapy with low cost BCPAP in two time period .There is differences in survival –to – discharge, shows that oxygen saturation rate was higher in period 2.

Yacov Rabi (2015) conducted prospective randomized control trial to determine which oxygen titration strategy was most effective achieving and maintaining oxygen saturation of 85-92% during delivery room resuscitation. Samples with 32 weeks gestation age were selected, with resuscitation 100% oxygen (high oxygen group) oxygen titration strategy (moderate oxygen group) or 21% oxygen (low oxygen group). In moderate and low oxygen groups, oxygen concentration was adjusted by 20%. The results shown that moderate oxygen group spent greater time in the target oxygen saturation range than high oxygen group. The study recommended that titrating from an initial oxygen concentration of 100% was more effective than giving a static concentration of 100% oxygen in maintaining preterm infants target saturation range .

David.J. Henderson (2015) conducted a study on Restricted versus Liberal oxygen exposure for preventing morbidity and mortality in preterm or low birth weight infants. Three hundred and fifty samples were selected by random method and assessed the effects of lower vs higher blood oxygen levels. In this analysis, restricting oxygen exposure in the early neonatal period significantly reduced the

incidence and severity of Retinopathy of Prematurity. The study recommended that, unmonitored oxygen therapy has potential harms without clear benefits.

Jatana et.al., (2014) conducted a study to evaluate a system of standardizing the oxygen concentration inside the oxygen hood and to develop guidelines for controlled Fio2 (Fraction of inspired oxygen) administration by changing the size of the hood, lid position on the hood and oxygen flow rate without oxygen analyzer. Thirty neonates requiring oxygen to be delivered through head box achieved more predictable oxygen concentration at all flow rates. No carbon dioxide (CO2) retention was found at a flow rate of 4l/ mt.

Zulian Liu et.al., (2014) investigated the effectiveness of treatment with hyperbaric oxygen for neonates with Hypoxic Ischemic Encephalopathy. Twenty-eight Samples were selected using randomized controlled trials; compared usual care with hyperbaric oxygen outcomes included mortality and long term neurological sequeale. Treatment with hyperbaric oxygen had better outcomes. Meta analysis was 0.26 for mortality and 0.41 for neurological sequeale.

Mclaughlin et.al., (2013) conducted study to assess the fraction of inspired oxygen (Fio2) via nasal cannula and identify clinical variables that affect Fio2. Twenty newborns under oxygen therapy via nasal cannula up to 4l/mt were selected and assessed. The results were Fio2 increased as oxygen flow was increased. Infants receiving oxygen via nasal cannula >2l/mt may be at risk for hypoxic lung injury. Recommendation was use of lowest oxygen flow to maintain normal oxygenation for long term oxygen therapy.

Liptsen, E, et.al., (2012) compared work of breathing and breathing asynchrony during bubble nasal continuous positive airway pressure (NCPAP) vs variable-flow (VF)-NCPAP among premature infants. 18 premature infants of birth weight <1500 g who required NCPAP for mild respiratory distress was studied on bubble and VF-NCPAP at 8, 6, 4, and 0 cm H2O. Tidal volumes were obtained bycalibrated respiratory inductance plethysmography. Esophageal pressure estimated intrapleural pressure. Inspiratory and resistive work of breathing was calculated from pressure volume data. Breathing asynchrony was assessed with phase angle. The results at all NCPAP levels were referenced to VF-NCPAP values at 8 cm H2O. Bubble NCPAP did not decrease resistive work of breathing relative

to 0 cm H2O. Resistive work of breathing (p=0.01), respiratory rate (p<0.03), and phase angle (p=0.002) were all greater with bubble compared to VF-NCPAP.This study concluded that the more labored and asynchronous breathing seen with bubble NCPAP may lead to higher failure rates over the long term than with VF-NCPAP.

III. LITERATURE REVIEW RELATED TO EFFECTIVENESS OF PRONE POSITION ON OXYGEN SATURATION

Rufarondokera (2017) cochrane review identified low moderate quality evidence that prone positioning improved oxygen saturation in those being bubble CPAP in short term.

Utarioy et,al, (2017) a study used a randomized controlled trial with a crossover design among 15 preterm infants receiving CPAP. The quarter prone position was effective for improving the oxygenation status of premature infants using CPAP.

Prernasharma, et,al, (2016) conducted a quantitative experimental study in St. Stephan's hospital, Delhi 60 preterm infants with respiratory distress ,30 in each group (prone &supine position). The analysis shows that effectiveness was more among the preterm infants receiving prone position as evidenced by pre &post intervention mean changes for all the variables.(Heart rate, Respiratory rate,Spo2,)

Rivas Fernandez.M, et.al., (2016) conducted a study quasi randomized clinical trials comparing different position,19 trails involving 516 preterm babies , increased oxygen saturation level of pre term babies.

BalaguerA.et.al., (2013) conducted a quasi randomized clinical trails among 12 trails, 284 preterm babies comparing prone vs supine position, the study revealed that increased in arterial oxygen tension (po2) in prone position comparatively high2.75 mhg and 9.75mhg.

Rev.Paul, et.al., (2012) conducted a cross sectional study with a paired sample of 45 preterm infants with respiratory distress syndrome were evaluated. The mean gestational age was 30.4 weeks and mean birth weight was 1522gm. The oxygen saturation was higher in prone position ($p<0.001$), values of maximum inspiratory pressure were lower in prone position when compared to preterm infants in supine position.

John wiley & sons, et.al., (2012) conducted a randomized controlled trial with acute respiratory distress syndrome , data extracted from 53 studies, included 24 studies with 581 preterm babies, the study revealed that prone position was more beneficial than supine positioning in terms of oxygen saturation mean(1.97%), arterial oxygen (6.24mmhg).

Tricia G.Oliveria et.al., (2011) studied the effectiveness of prone position in reducing thoraco abdominal asynchrony, peripheral oxygen saturation among preterm neonates. By using quasi experimental design twelve preterms were studied in both the supine and prone position. A total of 9,167 respiratory cycles were analyzed. The result shows that the prone position was associated with significant reductions in labored breathing . The prone position asynchrony, without affecting breathing pattern or peripheral oxygen saturation

Yao, et,al, (2011) conducted a study shows that preterm infants 1-6 hours after weaning from mechanical ventilation had a higher pao2 in prone position compared with supine position.

Ry and Step (2010) taken an article from American Association of Pediatrics given the reasons why babies in the NICU will be sleeping on their tummies a lot, initially. Prone position avoids Gastro esophageal reflux, increase airflow; quiet sleep, which is important for maturation and brain development rest at lower stress levels and conserves energy.

Larry (2010) conducted study regarding the reduction of sudden Infant Death syndrome (SIDS) in preterm babies admitted in NICU, where the infants placed on their abdomen has more advantages that is improvement in respiratory mechanics 18%, 5% airway patency, O2 saturation increases to 23%, 20% developmental improvement, 14% comfort breathing, 13% increase in feeding tolerance, 7% reduction in apnea and bradycardia.

San diego (2010) quantified oxygenation and episodes of hypoxemia in 55 infants (birth weight ≤1000 gm) with CLD (Chronic lung disease) in the supine

versus prone position, for 1-hour time intervals. Oxygen saturation was measured with the Nellcor N-200 pulseoxmeter and a computer program. Prone positioning increased oxygen saturation from 92.0% to 94.1% ($p<0.001$) and significantly decreased episodes of hypoxemia to oxygen saturation levels of less than 90%, 85%, and 80% ($p <0.001$). The findings support prone positioning for the extremely low birth weight infants.

Casado – Flores, et.al., (2009) studied prospectively that patients in the prone group shown an improvement in oxygenation, ventilation perfusion matching and secretion clearance. Dependent lung units are better ventilated in the prone position. He concluded that prone positioning cannot be recommended routinely, but may be considered in the preterm with severe ARDS and refractory hypoxemia.

Antunes (2008) conducted the effectiveness of prone versus position from the start of weaning of ventilator until extubation. Randomized parallel controlled trial method used to select samples with 24-33 weeks of gestational age. Prone position versus supine was put and respiratory parameters monitored. The result shown that significant improvement in oxygen saturation, respiratory rate and heart rate also $p<0.002$.

Salmanyaadit, et.al., (2008) conducted a study shows that prone position improves oxygen in infants with respiratory distress who were receiving oxygen throughahood.

CHAPTER – III

METHODOLOGY

Research methodology is a way to find out the result of a given problem on a specific matter or problem that is also referred as research problem. In methodology, researcher uses different criteria for solving or searching the given problem. **(Redman and Mory, 2016).**

The present study was conducted as an experimental study to assess the effectiveness of prone position has upon the oxygen ratio in respiratory distress children in a selected hospital in Chennai.

This chapter includes research approach , research design, variables, setting, population, sample size, sampling technique, development of tool, content validity, pilot study, data collection procedures, and plan for data analysis.

RESEARCH APPROACH

Research approach is the most essential part of any research the entire study is based on it. The research approach used in this study is experimental approach to assess the effectiveness of a dependent variable. This study is focused to assess the effectiveness of prone position has upon the oxygen ratio in ventilated children.

RESEARCH DESIGN

A research design is a well throughout, systemic and even controlled plan for finding answers to study question. A research design is a framework or guide used

for the planning, implementation and analyse of a study and it provides an outlet of how the research will be carried out and methods will be used. **(Patton, 2016).**

Research design can be defined as a blue print to conduct a research study, which involves the description of research approach, study setting, sampling size and sampling technique, tools, methods of data collection and analysis to answer a specific research question for testing research hypothesis.

The research design selected to this study is experimental research design. This design will help to establish scientific protocols and will generate good statistical data.

In this study the subjects were chosen from NICU that could range from preterm New born. For all subjects were pre test was given and received prone position for two hours with oxygen in Respiratory distress. The post test was conducted to assess the effectiveness of prone position has upon the oxygen ratio in Respiratory distress children were studied in pre and post test category.

In this study the chosen subjects were given prone position and for two hours and the variables were studied. The post test was valuables incorporated.

The selection of design is based on the purpose of the study and the purpose in to assess the effectiveness of prone has upon oxygen ratio in Respiratory distress New born.

VARIABLES

Variables included in the study were selected physiological Parameters (Dependent Variable) prone position (Independent Variable),and the demographic Variables includes gestational age, chronological age, sex, nature of birth , place of delivery, Apgar score, weight of the baby, type of feed , mode of oxygen delivery and amount of oxygen delivery.

SETTING OF THE STUDY

The study is the location in which the research is conducted. It could natural, partially controlled or highly controlled. The selection of setting is based on the feasibility, availability of subjects and geographical proximity **(Suresh K Sharma, 2016)**

The present study was conducted in Neonatal intensive care unit in SIMS hospital, Chennai. This hospital has NICU there were more than 10-15 babies nursed per day.

POPULATION

The study population includes preterm neonates more than 28-37 weeks of gestation from 0-28 days under oxygen therapy through nasal cannula, oxygen hood, admitted at SIMS Hospital, Chennai.

SAMPLE SIZE

The study sample comprises of neonates more than 28-37 weeks of gestation on oxygen therapy in Neonatal Intensive Care Unit at. Total sample size is 60, which

is divided into the experimental group 30 and control group 30 who met the inclusion criteria were selected.

SAMPLING TECHNIQUE

The samples of the study were selected using Non- probability sampling method- convenience sampling. According to **Polit and Hungler (2016)** convenience sampling involves selection of the most readily available persons as participants.

INCLUSION CRITERIA

- Neonates with the gestational age more than 28-37 weeks.
- Neonates with respiratory distress, birth asphyxia, and transient tachypnoea of newborn
- Preterm neonates on oxygen therapy via nasal cannula, oxygen hood.
- Neonates who are admitted in NICU at hospital.
- Preterm babies whose parents were willing to participate in the study.
- Neonates who has spontaneous breathing.
- Weight of the neonates more than 1000gm. – 2500gm.
- Caregivers who knows to speak Tamil and English.

EXCLUSION CRITERIA

- Preterm babies who gets discharged before three days of hospital stay.
- Preterm babies who are critically ill.
- Neonates under mechanical ventilator.
- Neonates with congenital anomalies.
- Preterm babies whose parents were not willing to participate in this study
- Newborns who requires continues intra cranial pressure monitoring
- Newborn who underwent tracheostomy

DEVELOPMENT AND DESCRIPTION OF THE TOOL

The investigator developed the data collection tool after extensive review of literature and discussion with experts, to collect the data needed for the study. The tool consists of two sections.

Section A: Demographic data.

Section B: Observation schedule of physiological parameters.

Section A: Demographic Variables

It consists of the demographic variables of the preterm clients,

- Gestational age,

- Chronological age of the child
- Gender
- Place of delivery
- Apgar score at birth
- Weight of the baby
- Type of feed
- Mode of oxygen delivery
- Amount of oxygen delivery (FIO_2)

Section B:

This section includes observation schedule of physiological parameters,

- O_2 saturation,
- Heart rate
- Respiratory rate at 30, 60, 90 and 120-minute intervals
- Fio2

SCORING TECHNIQUE

Section A & B were not scored but data were categorized for descriptive and Inferential statistical analysis.

CONTENT VALIDITY OF THE TOOL

Experts in the field of nursing validated the content of the tool. The suggestions of the experts were incorporated in the study and the tool was finalized. The refined tool was used for data collection.

RELIABILITY OF THE TOOL

After pilot study, reliability of the tool was assessed by using Test retest method. Reliability correlation coefficient value is 0.81. This correlation coefficient is very high and it is good tool for assessing the effectiveness of prone position on the selected physiological parameters of neonates on oxygen therapy in Neonatal Intensive care unit.

PILOT STUDY

Pilot study is the small version of trial run done in preparation for a major study. **(Pilot & Hunger, 2013)**

The pilot study was conducted in NICU, in Erode government hospital for a period of 1 week. Formal permission was obtained from the Medical Superintendent of Erode Hospital and Head of the Department of Neonatology. 6 samples were chosen from the main population using Non probability convenient sampling technique. Informed consent was obtained from the parents of the sample and data was collected for the period of 5 days. The instrument was found reliable for preceding the main study. The other opinions and suggestions were incorporated in the main study to accomplish the objectives of the study.

METHODS OF DATA COLLECTION

After obtaining initial permission from the college and the formal approval from the HOD of Paediatrics, Department in the hospital, the study was started .Sample was selected by non probability convenient sampling. The investigator introduced herself to the parents and developed a good rapport and made them to co operate with the study. After getting demographic data, pre- test was done with the help of the prepared tool. After the pre-test, prone position was given for two hours and duly the period preterm babies assessed by using the same tool. Based on the collection data, effectiveness was found by comparing the pre-test and post test score.

PLAN FOR DATA ANALYSIS

The collected data was arranged and tabulated to represent the findings of the study. Data were collected, arranged, tabulated and was analyzed by using descriptive and inferential statistics.

Descriptive Statistics: Frequency, percentage, mean, and standard deviation were used for categorical data.

- Frequency and percentage distribution were used to describe the demographic variables.
- Heart rate, Respiratory rate and oxygen saturation were given in Mean and Standard Deviation.

Inferential Statistics

- Student independent 't' test was used to assess the effectiveness of prone position.
- Chi square test was used to associate the post test knowledge with the selected demographic variables.

PROTECTION OF HUMAN SUBJECTS

Institutional ethics committee, SIMS Hospital reviewed and approved the study to be conducted on human subjects. Informed consent was obtained from caregivers of each study subjects after detailed explanation about the nature of the study.

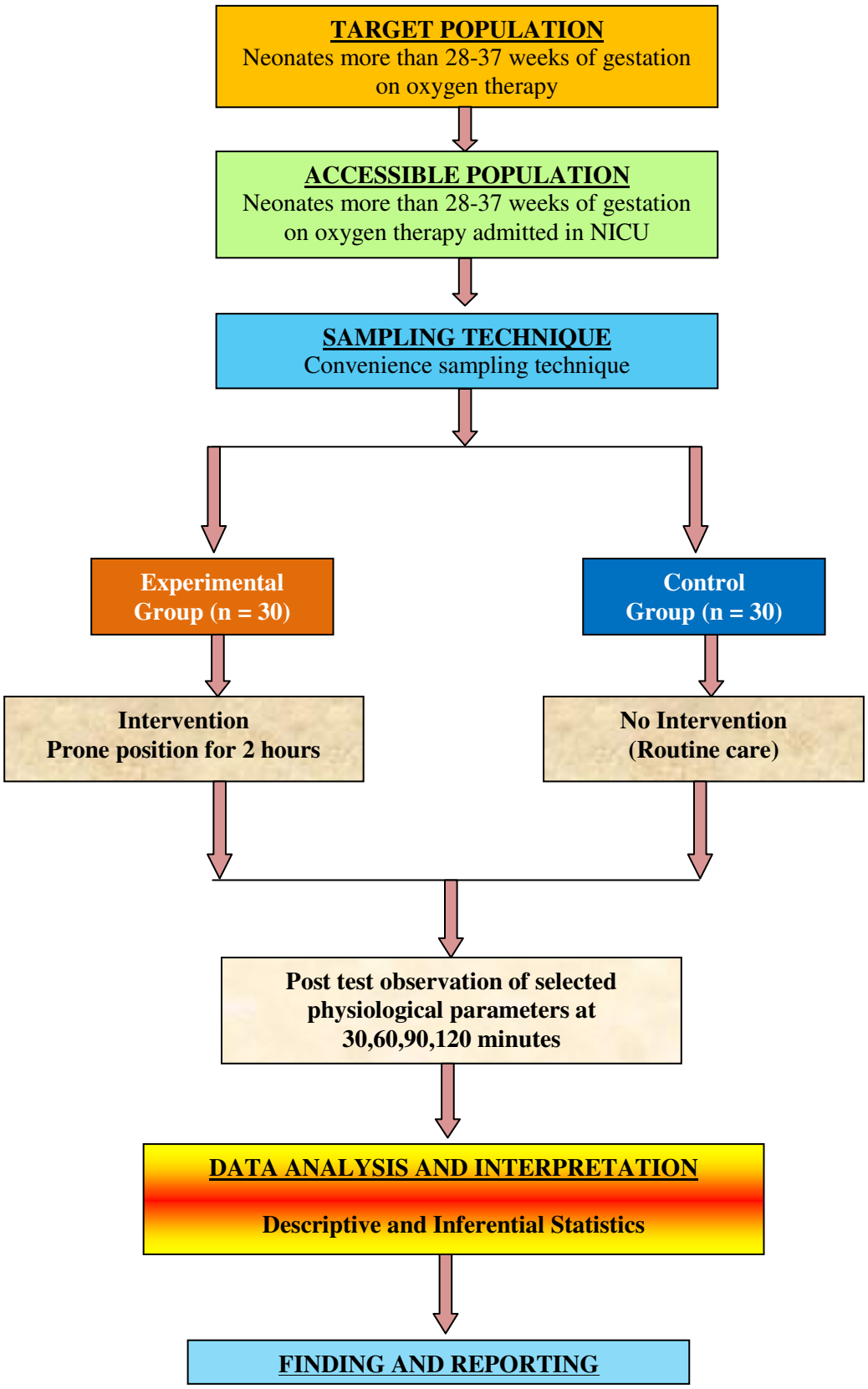


Fig. 3.1: SCHEMATIC REPRESENTATION OF RESEARCH METHODOLOGY

CHAPTER – IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of the data collected to assess the effectiveness of prone position on oxygen saturation among preterm babies data findings have been tabulated and interpreted according to plan for data analysis.

Descriptive and inferential statistics were used for analysing data based on objectives of the study. This chapter includes six sections.

Section – I: Distribution of demographic variables.

Section – II: Assessment of the post test of selected physiological parameters among preterm babies in prone group.

Section – III: Assessment of the post test of selected physiological parameters among preterm babies in supine group.

Section – IV: Comparison of the post test of selected physiological parameters between prone and supine group preterm babies.

Section – V: Association between distribution Amount of oxygen delivery (Fio2) in demographical variable in supine and prone position among preterm babies.

Section – VI: Association between distribution mode of oxygen distribution among preterm babies in prone group with their demographic variables.

SECTION - I: DISTRIBUTION OF DEMOGRAPHIC VARIABLES.

Table 4.1: Frequency and percentage distribution of demographic variables.

S.No.	Demographic Variables	Group			
		Supine (n=30)		Prone (n=30)	
		No.	%	No.	%
1.	**Gestational age**				
	a. 28 – 30 weeks	16	53%	19	63%
	b. 31 – 33 weeks	9	30%	6	20%
	c. 34 – 37 weeks	5	17%	5	17%
2.	**Chronological age**				
	a. < 7 days	20	67%	22	73%
	b. 7-14 days	5	16.5%	8	27%
	c. 15-21 days	5	16.5%	0	0%
3.	**Sex**				
	a. Male	15	50%	16	53%
	b. Female	15	50%	14	47%
4.	**Nature of birth**				
	a. Normal delivery	7	23%	8	27%
	b. Caesarean section	23	77%	22	73%
	c. Assisted delivery	0	0%	0	0%
5.	**Place of birth**				
	a. Hospital	30	100%	30	100%
	b. Home	0	0%	0	0%
6.	**Apgar score (5 min)**				
	a. 7 – 10	24	80%	22	73%
	b. 4 – 6	6	20%	8	27%
7.	**Weight of the baby**				
	a. 1000 gm – 1500 gm	15	50%	13	43%
	b. 1501 gm – 2000 gm	10	33%	12	40%
	c. 2001 gm – 2500 gm	5	17%	5	17%
8.	**Type of feed**				
	a. Breast feed	11	36.5%	15	50%
	b. Intravenous fluid	11	36.5%	9	30%
	c. Nasogastric tube	8	27%	6	20%
9.	**Mode of oxygen delivery**				
	a. Nasal cannula	15	50%	14	46.5%
	b. Oxygen hood	10	37%	14	46.5%
	c. Bubble CPAP	5	17%	2	7%
10.	**Amount of oxygen delivery**				
	a. Room air (21%)	5	16.5%	5	16.5%
	b. 21% - 30%	10	33.5%	12	40%
	c. 31% - 40%	10	33.5%	11	36.5%
	d. 41% - 60%	5	16.5%	2	7%

The above table depicts that majority of the subjects were between 28 to 30 weeks (53%) in supine and (63%) in prone group, Majority (73%) of the subjects were less than 7 days of age and hospital delivery (100%), more than half of the proportion(77%) in supine and (73%) in prone group were delivered by caesarean section, almost half of both the group supine (80%) prone (73%) were having Apgar score of 7-10. More than half of the proportion of both the group supine (50%) prone (43%) were having birth weight of 1000gm-1500gm, Highest proportion of both the group supine (36.5%) prone (50%) were received intravenous fluids and breast feeding, an similar proportion of both supine (50%) and prone (46.5%) receiving oxygen through nasal cannula similar supine position 37% and prone position 46.5% of oxygen receiving through oxygen hood.

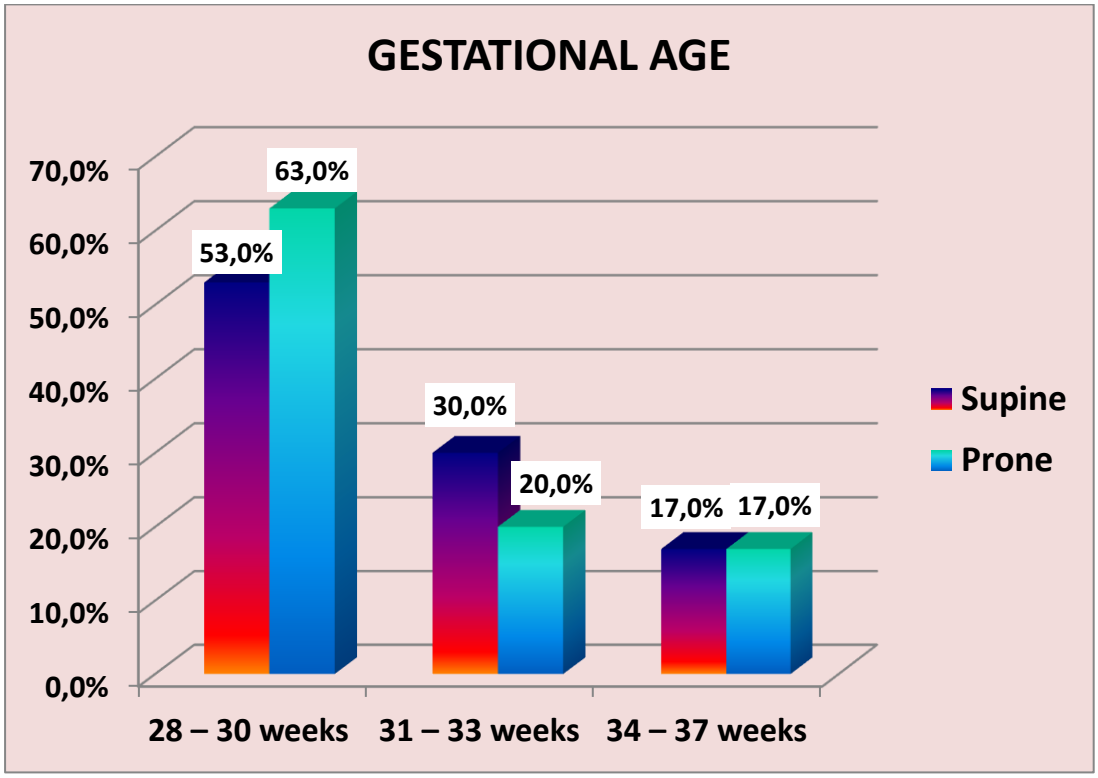


Figure 4.1: Percentage distribution of gestational age in weeks of preterm babies

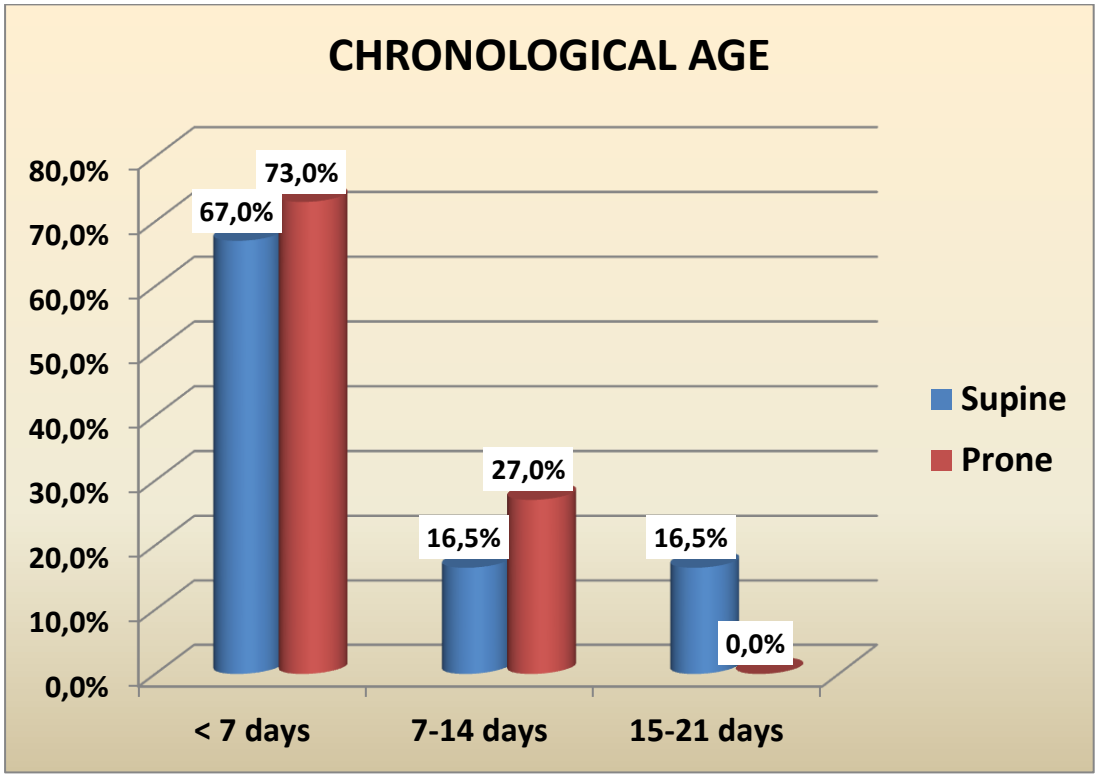


Figure 4.2: Percentage distribution of chronological age of preterm babies

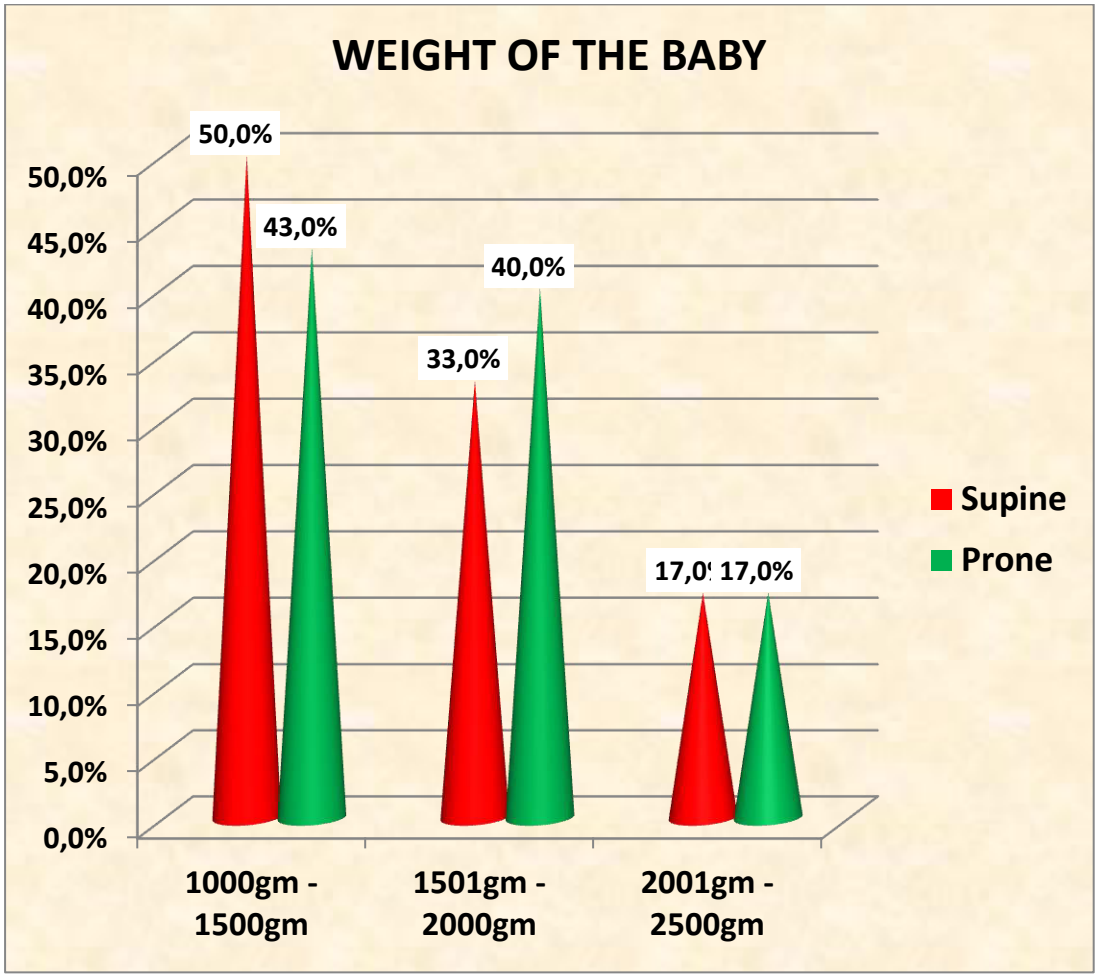


Figure 4.3: Percentage distribution weight of preterm babies

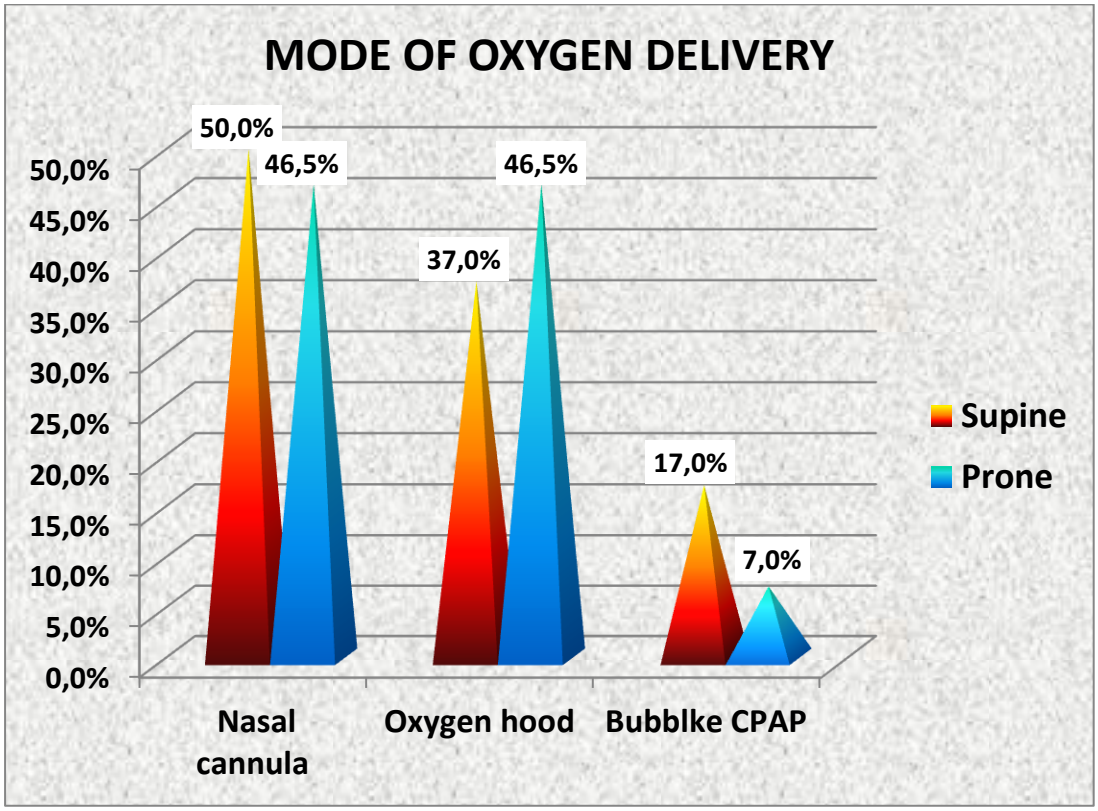


Figure 4.4: Percentage distribution mode of oxygen delivery

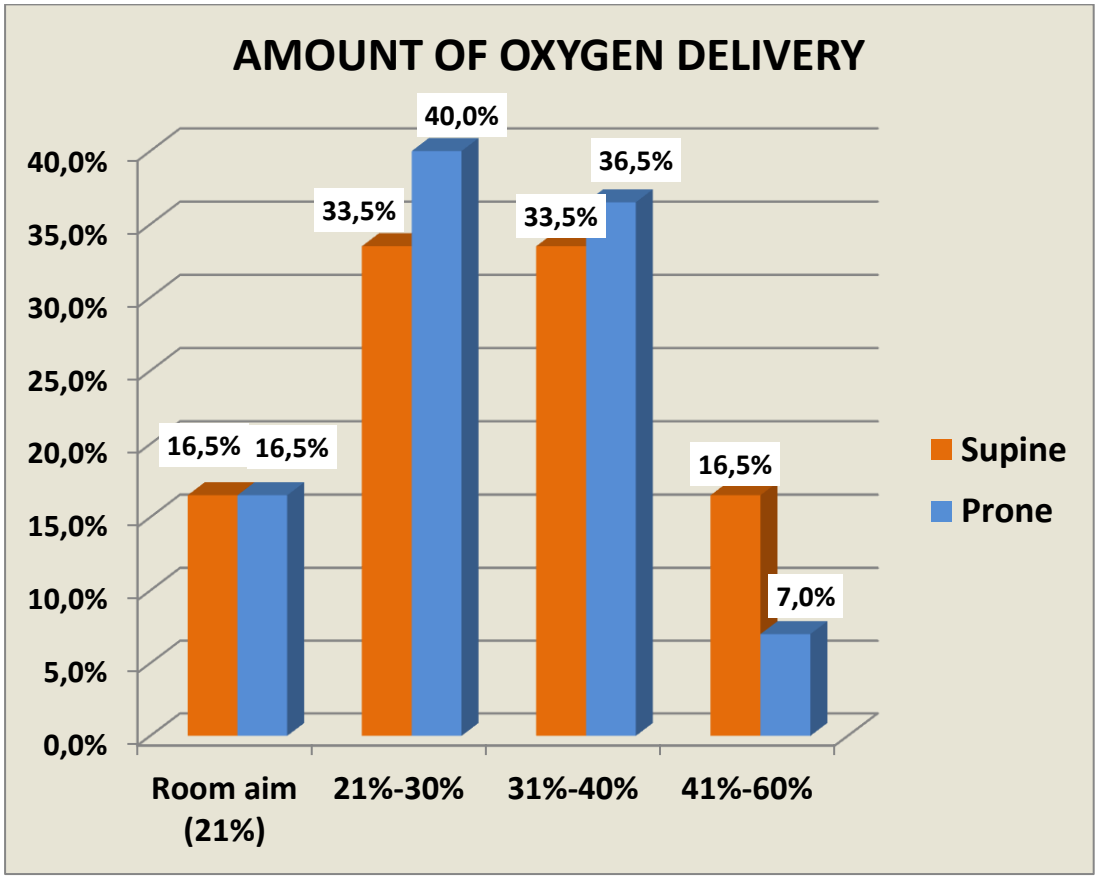


Figure 4.5: Percentage distribution Amount of oxygen delivery (Fio2)

SECTION – II: ASSESSMENT OF THE POST TEST OF SELECTED PHYSIOLOGICAL PARAMETERS AMONG PRETERM BABIES IN PRONE POSITION GROUP

Table 4.2: Distribution of post test of selected physiological parameters in prone position

Days	Time	Heart rate (beats/Minutes)		Respiratory rate (breaths/ minute)		Oxygen saturation (%)	
		Mean	SD	Mean	SD	Mean	SD
Day -1	30 mints	148.8	10.61	55.5	7.06	94.67	2.70
	60mints	151.2	9.059	53.9	7.16	92.33	1.66
	90mints	150.4	9.03	70.5	4.05	90.20	3.44
	120mints	148.6	7.59	64.9	5.82	90.97	2.73
Day -2	30 mints	147.1	9.63	56.2	6.37	95.40	2.56
	60mints	148.4	9.50	60.57	5.85	96.3	2.28
	90mints	147.4	8.75	60.60	6.10	92.03	1.88
	120mints	147.4	10.15	60.33	5.76	92.70	3.43

The above table depicts that in the prone position the heart rate was between 147- 151b/mt, respiratory rate was between 55- 70 breaths/mt and the oxygen saturation was between 90- 96% for day 1 and day 2 respectively.

SECTION - III: ASSESSMENT OF THE POST TEST OF SELECTED PHYSIOLOGICAL PARAMETERS AMONG PRETERM BABIES IN SUPINE POSITION GROUP

Table 4.3: Distribution of post test of selected physiological parameters in supine position

Days	Time	Heart rate (beats/Minutes)		Respiratory rate (breaths/ minute)		Oxygen saturation (%)	
		Mean	SD	Mean	SD	Mean	SD
Day -1	30 mints	148.6	11.79	56.1	7.38	93.43	3.08
	60mints	149.2	10.95	55.2	7.16	91.10	2.38
	90mints	148.6	10.691	65.9	5.16	86.93	3.44
	120mints	146.5	9.48	67.9	6.52	89.70	1.68
Day -2	30 mints	144.6	9.97	57.7	6.53	94.80	2.56
	60mints	144.5	10.42	58.13	6.07	95.1	2.17
	90mints	144.5	10.39	56.83	6.07	91.03	3.64
	120mints	147.3	11.34	63.63	4.41	90.53	3.68

The above table depicts that in the supine position the heart rate was between 144- 149b/mt, respiratory rate was between 55- 68 breaths/mt and the oxygen saturation was between 86- 95% for day 1 and day 2 respectively.

SECTION - IV: COMPARISON OF THE POST TEST OF SELECTED PHYSIOLOGICAL PARAMETERS BETWEEN PRONE AND SUPINE GROUP.

Table 4.4: Comparison of the heart rate between prone and supine group

Days	Time	Heart rate				Student independent t–test	Level of Significant
		Supine		Prone			
		Mean	SD	Mean	SD		
Day 1	30mits	148.6	11.791	148.8	10.61	t=1.36 DF=58	p>0.05 NS
	60mints	149.2	10.95	151.2	9.05	t =0.81 DF=58	p>0.05 NS
	90mints	148.6	10.691	150.4	9.03	t =0.64 DF=58	p>0.05 NS
	120mints	146.5	9.48	148.6	7.50	t =0.93 DF=58	p>0.05 NS
Day 2	30mints	144.6	9.97	147.1	9.63	t =1.07 DF=58	p>0.05 NS
	60mints	144.5	10.42	148.4	9.50	t =1.78 DF=58	p>0.05 NS
	90mits	144.5	10.39	147.4	8.75	t =1.62 DF=58	p>0.05 NS
	120mints	147.3	11.34	147.4	10.15	t =0.03 DF=58	p>0.05 NS

The above table compares the heart rate between prone and supine position. It shows that there is a statistically significant difference ($p<0.05$) after second day 60 minutes onwards. Statistical significance was calculated using student independent t test.

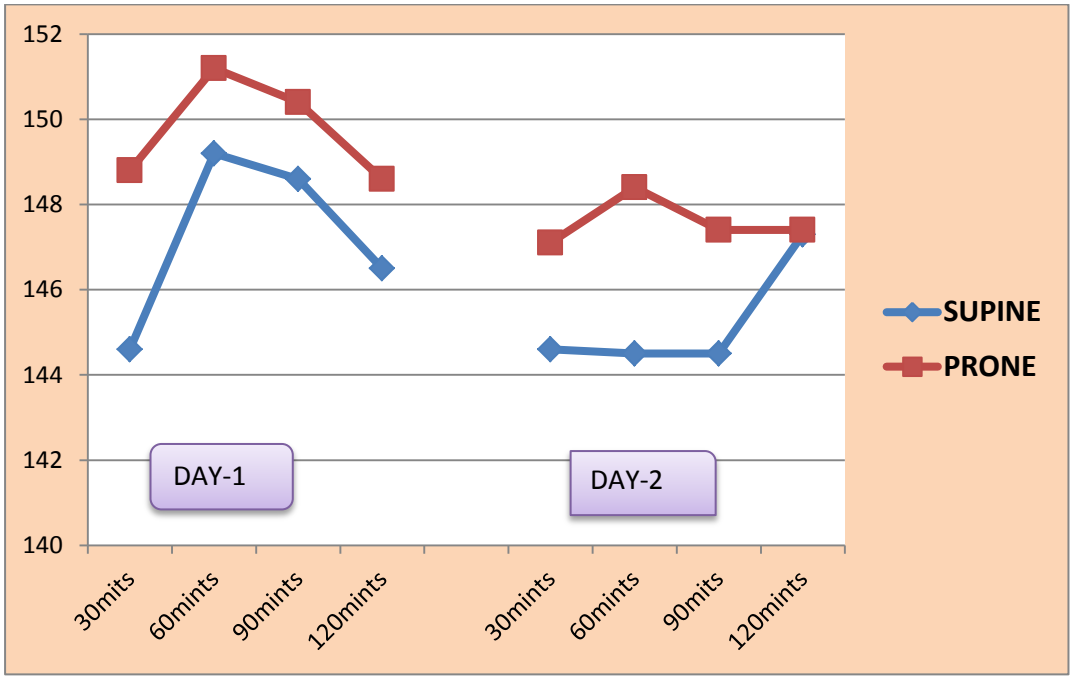


Figure 4.6: Comparison of the heart rate between prone and supine position.

Table 4.5: Comparison of the respiratory rate between prone and supine group

Days	Time	Respiratory rate				Student independent t –test	Level of Signi ficant
		Supine		Prone			
		Mean	SD	Mean	SD		
Day 1	30mits	56.1	7.38	55.5	7.06	t=0.28 DF=58	p>0.05 NS
	60mints	55.2	7.6	53.9	7.16	t =0.61 DF=58	p>0.05 NS
	90mints	65.9	5.16	70.5	4.05	t =3.99 DF=58	P<0.05 S
	120mints	67.90	6.52	64.9	5.82	t =2.00 DF=58	P<0.05 S
Day 2	30mints	57.7	6.53	56.2	6.37	t =1.11 DF=58	p>0.05 NS
	60mints	58.13	6.078	60.57	5.85	t =-1.95 DF=58	p>0.05 NS
	90mits	56.83	6.67	60.60	6.10	t =-2.377 DF=58	P<0.05 S
	120mints	63.63	4.415	60.33	5.76	t =2.32 DF=58	P<0.05 S

The above table compares the respiratory rate between the prone and supine position. It shows there is a statistically significant difference ($p<0.05$) after 90mits of first day and second day 60 minutes onwards. Statistical significance was calculated using student independent t-test.

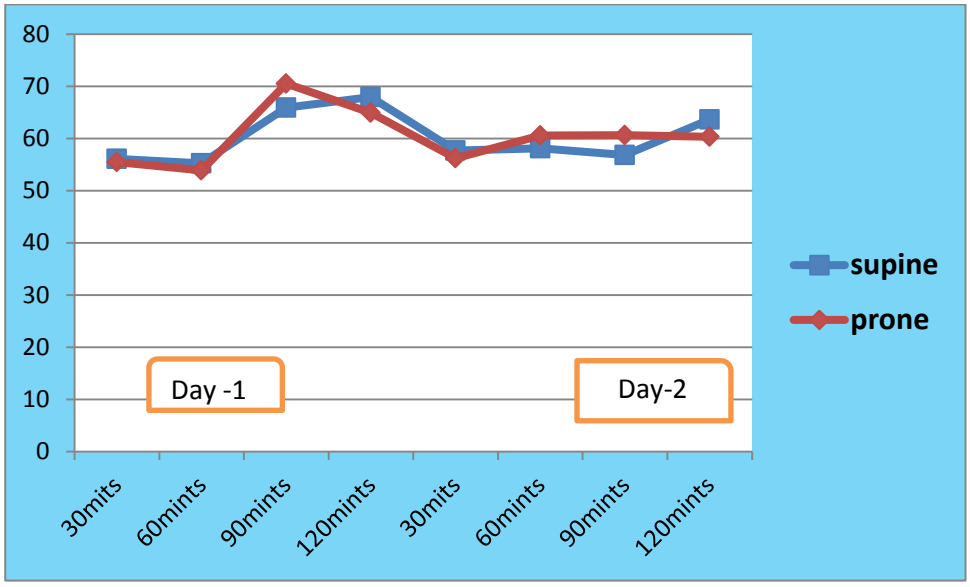


Figure 4.7: Comparison of the respiratory rate between prone and supine position

Table 4.6: Comparison of the oxygen saturation between prone and supine group

Days	Time	oxygen saturation				Student independent t – test	Level of Signi ficant
		Supine		Prone			
		Mean	SD	Mean	SD		
Day 1	30mits	93.43	3.081	94.67	2.708	t=-1.99 DF=58	P <0.05 S
	60mints	91.10	2.38	92.33	1.668	t =-2.25 DF=58	P <0.05 S
	90mints	86.93	3.44	90.20	3.44	t =-3.4 DF=58	P <0.05 S
	120mints	89.70	1.68	90.97	2.735	t =2.44 DF=58	P <0.05 S
Day 2	30mints	94.80	2.56	95.40	2.56	t =0.92 DF=58	P >0.05 S
	60mints	95.10	2.17	96	2.28	t =-2.13 DF=58	P <0.05 S
	90mits	91.03	3.64	92.03	1.88	t =-1.609 DF=58	P >0.05 NS
	120mints	90.53	3.68	92.70	3.436	t =2.42 DF=58	P <0.05 S

The above table compares the oxygen saturation between the prone and supine position. It shows there is a statistically significant difference ($p<0.01$) after first day 30 minutes onwards. Statistical significance was calculated using student independent t-test.

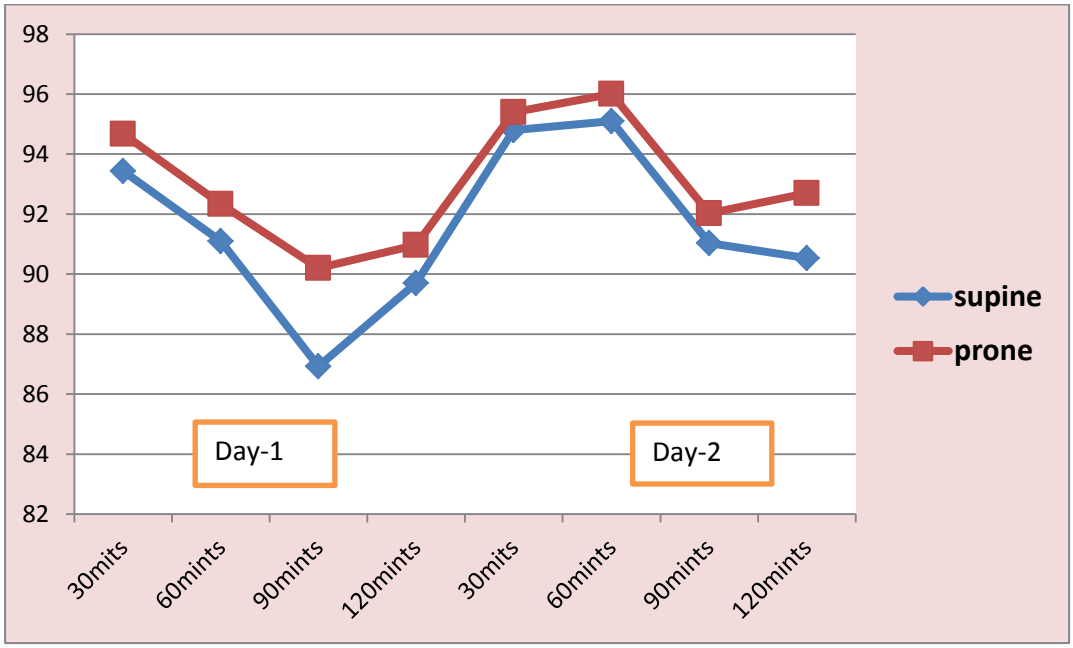


Figure 4.8: Comparison of the oxygen saturation between prone and supine position

SECTION – V: ASSOCIATION BETWEEN DISTRIBUTION AMOUNT OF OXYGEN DELIVERY (FIO2) IN DEMOGRAPHICAL VARIABLE IN SUPINE AND PRONE POSITION AMONG PRETERM BABIES.

Table 4.7 : Association between distribution Amount of oxygen delivery (Fio2) in demographical variable in supine and prone position

Oxygen delivery	Prone	supine	Chi-Square Tests[a]			
			value	df	Asymptotic Significance (2-sided)	
21%-30%	40%	33.3%	**1515b**	**3**	**0.676**	**P >0.05 NS**
31%-40%	36.7%	33.3%	**1.518**	**3**	**0.669**	**P >0.05 NS**
41%-60%	6.7%	16.7%	**60**	**--**	**--**	**--**
Room air (21%)	16.7%	16.7%	**--**	**--**	**--**	**--**

Finding of the study revealed that there is no significant association between amount of oxygen delivery (Fio2) in supine and prone position preterm babies. The study revealed that homogeneous

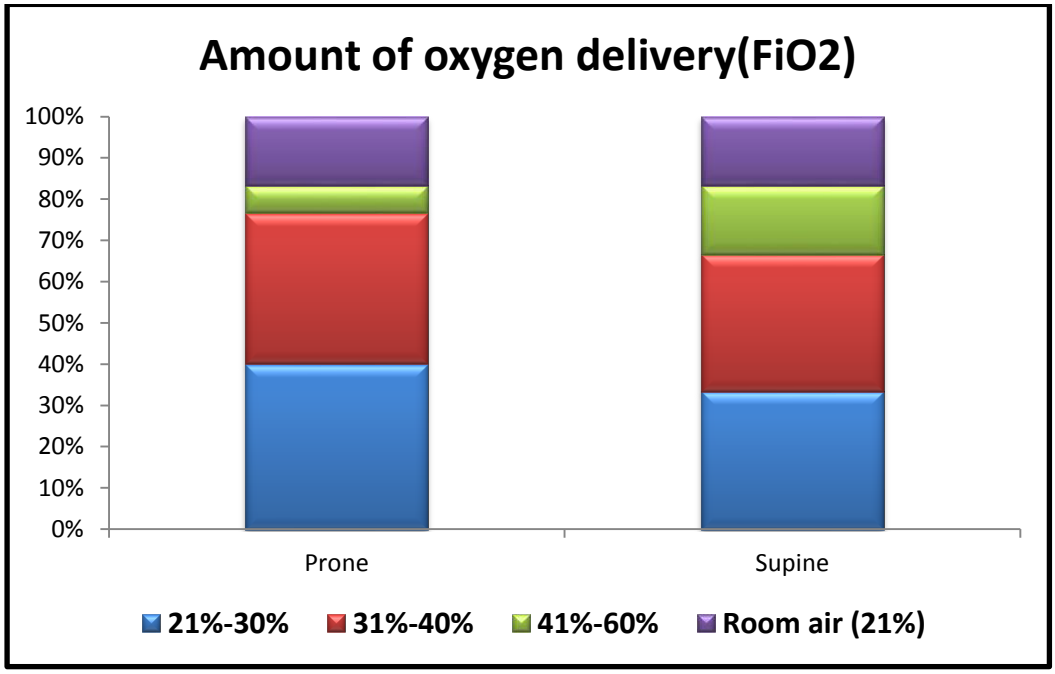


Figure 4.9: Association between distribution Amount of oxygen delivery (Fio2) in demographical variable in supine and prone position

SECTION – VI: ASSOCIATION BETWEEN DISTRIBUTION MODE OF OXYGEN DISTRIBUTION AMONG PRETERM BABIES IN PRONE GROUP WITH THEIR DEMOGRAPHIC VARIABLES.

Table – 4.8: Association between distribution Mode of oxygen delivery in demographical variable in supine and prone position

Mode Oxygen delivery	Prone	Supine	Chi-Square Tests[a]			
			Value	df	Asymptotic Significance (2-sided)	
Bubble CPAP	6.7%	16.7%	**1.987b**	**2**	**0.370**	**P >0.05 NS**
Nasal cannula	46.7%	50.0%	**2.03**	**2**	**0.362**	**P >0.05 NS**
Oxygen hood	46.7%	33.3%	**60**	**--**	**--**	**--**

Finding of the study revealed that there is no significant association between amount of mode oxygen delivery in supine and prone position preterm babies. The study revealed that homogeneous.

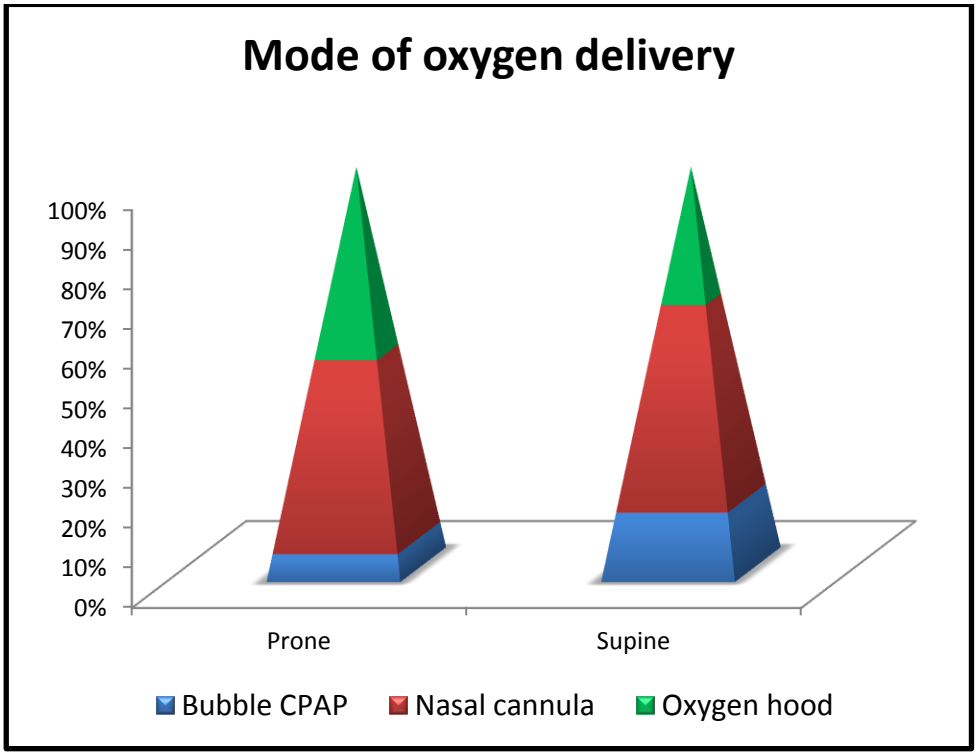


Figure 4.10: Association between distribution Amount of oxygen delivery (Fio2) in demographical variable in supine and prone position

CHAPTER – V

DISCUSSION

The results of the study were discussed based on the findings of the study. The major findings of the study presented under following headings:

A) Finding based on frequency and percentage distribution of demographic factor

- The present study reveals that most of the gestation 53% in supine and 63% in prone , 53% & 63% were between 28-30 weeks of gestation in both the groups and 30% & 20% were between 31-33weeks in supine and prone position, 17% and 17% where between 34-37 weeks in supine and prone position.

- Majority 73% of the subjects were less than 7 days of age and 100% hospital delivery in both the groups.
- More than half of the proportion 77% in supine and 73% in prone group were delivered by caesarean section.

- Almost half of both the group supine 80% prone 73% were having Apgar score of 7-10.

- More than half of the proportion of both the group supine 50% prone 43% were having birth weight of 1000gm-1500gm,

- Highest proportion of both the group supine 36.5% prone 50% were received breast feeding and 36.5% & 30% received intravenous fluid.

- An equal proportion of both supine and prone 50% & 46.5% receiving oxygen through nasal cannula and 37% supine 46.5% prone received oxygen hood & 17% supine & 7% prone received bubble CPAP with room air (21%)

Findings of the study based on the objectives were,

Objective 1: Assessment of the post test of selected physiological parameters among preterm babies in prone group.

The data identified from the present study shows that the selected physiological parameters of preterm babies in prone and supine position were observed follows:

a) The heart rate between prone and supine position. It shows that there is a statistically significant difference ($p<0.05$) after second day 60 minutes onwards.

b) Compares the respiratory rate between the prone and supine position. It shows there is a statistically significant difference ($p<0.05$) after 90 minutes of first day and second day 60 minutes onwards.

c) Compares the oxygen saturation between the prone and supine position. It shows there is a statistically significant difference ($p<0.01$) after first day 30 minutes onwards.

Objective: 2 Assessment of the post test of selected physiological parameters among preterm babies in prone group.

- The data identified from the present study shows that the selected physiological parameters of preterm babies in prone position were observed as follows : the heart rate was between 147- 151b/mt, respiratory rate was between 55-70 breaths/mt and the oxygen saturation was between 90- 96%. This explains that prone position maintains the optimal oxygen saturation, respiratory rate within normal limit and heart rate was observed to be in higher normal limit.

Objective 3: Assess the post test of selected physiological parameters among preterm babies in supine position

- The data identified from the present study shows that the selected physiological parameters of preterm babies in supine position were observed as follows : the heart rate was between 144- 149b/mt, respiratory rate was between 55-68 breaths/mt and the oxygen saturation was between 86 - 95%. This explains that supine position maintains the optimal oxygen saturation, respiratory rate within normal limit and heart rate was observed to be in higher normal limit.

Objective 4: Association between distribution Amount of oxygen delivery (Fio2) in demographical variable in supine and prone position

- Finding of the study revealed that there is no significant association between amount of oxygen delivery (Fio2) in supine and prone position preterm babies. The study revealed that homogeneous.

Objective 5: Association between distribution Mode of oxygen delivery in demographical variable in supine and prone position

- Finding of the study revealed that there is no significant association between mode of oxygen delivery in supine and prone position preterm babies. The study revealed that homogeneous.

CHAPTER – VI

SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

This chapter deals with the summary, major findings of the study, implication recommendation, limitation and conclusion of the study.

SUMMARY

Handling can also be the most effective source of comfort and pleasure. The introduction of positive handling experiences is important at every stage of the infant's progress, but it is important to monitor their tolerance.

The primary aim to conducted **A study to assess the effectiveness of prone position on oxygen saturation among preterm babies in selected hospital, Chennai, Tamilnadu.**

Objectives:

- Assessment of the post test of selected physiological parameters among preterm babies in prone group.
- Assessment of the post test of selected physiological parameters among preterm babies in supine group.
- Comparison of the post test of selected physiological parameters between prone and supine group preterm babies.
- Association between distribution Amount of oxygen delivery (FiO2) in demographical variable in supine and prone position among preterm babies.

- Association between distribution mode of oxygen distribution among preterm babies in prone group with their demographic variables.

The study attempted to examine the following research hypothesis:

H_0 : There is a significant effectiveness of prone position on oxygen saturation among preterm babies in a selected study group.

H_1 : There is significant effectiveness of prone position on oxygen saturation among preterm babies in a selected study group.

The review of literature enabled the investigator to develop conceptual framework, tool and methodology for the study. Literature review was done as follows: (1) Studies related to preterm respiratory distress, (2) Studies related to effectiveness of prone position, (3) Studies related to oxygen therapy in preterm babies.

The conceptual framework adopted for the present study was based on Modified Wiedenbach's Theory Of Helping Art Of Clinical Nursing (1964). This model helped the investigator to find the deficiency of prone position to increase the physiological parameters of respiration among respiratory distress children. The basic concept of this study to improve the lung physiology of respiratory distress children. So the investigator has modified the Ernestine weidenbach's theory- a helping art. According to weidenbach's nursing practice consists of identifying the people's need for help, ministering the needed help , and validating that the need for help was met. The research design selected to this study is Experimental research

design. This design will help to establish scientific protocols and will generate good statistical data.

In this study the subjects were chosen from NICU that could range from preterm new born. For all subjects were pre test was given and received prone position for two hours with oxygen in Respiratory distress. The post test was conducted to assess the effectiveness of prone position has upon the oxygen ratio in Respiratory distress children were studied in pre and post test category.

The content validity of the tool was established by 3 experts. Prior permission from the authorities was sought and obtained. The study sample was collected from SIMS hospital, Chennai selected by non probability convenient sample method and based on sample selection criteria.

A total of 60 preterm babies from NICU were selected. Preterm babies parameters collected based on the tool. The collected data were analysed and interpreted based on objectives using SPSS package (Version 10) at 0.05 level of significance.

MAJOR FINDING OF THE STUDY

- The present study reveals that most of the gestation 53% in supine and 63% in prone , 53% & 63% were between 28-30 weeks of gestation in both the groups and 30% & 20% were between 31-33weeks in supine and prone position, 17% and 17% where between 34-37 weeks in supine and prone position.

- Majority 73% of the subjects were less than 7 days of age and 100% hospital delivery in both the groups.
- More than half of the proportion 77% in supine and 73% in prone group were delivered by caesarean section.
- Almost half of both the group supine 80% prone 73% were having Apgar score of 7-10.
- More than half of the proportion of both the group supine 50% prone 43% were having birth weight of 1000gm-1500gm,
- Highest proportion of both the group supine 36.5% prone 50% were received breast feeding and 36.5% & 30% received intravenous fluid.
- An equal proportion of both supine and prone 50% & 46.5% receiving oxygen through nasal cannula and 37% supine 46.5% prone received oxygen hood & 17% supine & 7% prone received bubble CPAP with room air (21%)

Findings of the study based on the objectives were,

Objective 1: Assessment of the post test of selected physiological parameters among preterm babies in prone group.

- The data identified from the present study shows that the selected physiological parameters of preterm babies in prone and supine position were observed follows

- The heart rate between prone and supine position. It shows that there is a statistically significant difference ($p<0.05$) after second day 60minutes onwards.

- Compares the respiratory rate between the prone and supine position. It shows there is a statistically significant difference ($p<0.05$) after 90mits of first day and second day 60 minutes onwards.

- Compares the oxygen saturation between the prone and supine position. It shows there is a statistically significant difference ($p<0.01$) after first day 30 minutes onwards.

Objective: 2 Assessment of the post test of selected physiological parameters among preterm babies in prone group.

- The data identified from the present study shows that the selected physiological parameters of preterm babies in prone position were observed as follows : the heart rate was between 147- 151b/mt, respiratory rate was between 55-70 breaths/mt and the oxygen saturation was between 90- 96%. This explains that prone position maintains the optimal oxygen saturation, respiratory rate within normal limit and heart rate was observed to be in higher normal limit.

Objective 3: Assess the post test of selected physiological parameters among preterm babies in supine position

- The data identified from the present study shows that the selected physiological parameters of preterm babies in supine position were

observed as follows : the heart rate was between 144- 149b/mt, respiratory rate was between 55-68 breaths/mt and the oxygen saturation was between 86 - 95%. This explains that supine position maintains the optimal oxygen saturation, respiratory rate within normal limit and heart rate was observed to be in higher normal limit.

Objective 4: Association between distribution Amount of oxygen delivery (Fio2) in demographical variable in supine and prone position

- Finding of the study revealed that there is no significant association between amount of oxygen delivery (Fio2) in supine and prone position preterm babies. The study revealed that homogeneous.

Objective 5: Association between distribution Mode of oxygen delivery in demographical variable in supine and prone position

- Finding of the study revealed that there is no significant association between mode of oxygen delivery in supine and prone position preterm babies. The study revealed that homogeneous.

CONCLUSION

One of the essential component of the newborn care is correct positioning as positioning can affect the baby's body system positively or negatively. By different positioning of infants, there are a variety of physiological outcomes affected including respiratory function, hemodynamic, neuromotor development, gastric function and sleep characteristics. Therefore, the goals of adaptive position are improving physiologic status, enhancing motor control, reducing stress, and weight

gain. The optimal posture for improving the physiological parameters of neonates were discussed in this study. The analysis of data provides evidence that prone positioning in neonates proved in improving oxygen saturation and reducing the respiratory rate than supine position.

IMPLICATION OF THE STUDY

The implications of the study are discussed related to nursing education, nursing practice, nursing administration and nursing research.

Nursing Practice

- Basic nursing practice is important to develop their knowledge, attitudes and skills about positioning of newborns.

- The prime goal of nursing the acute or chronically ill infant and postural support should be considered not only for its intrinsic value but also for optimizing autonomic and physiological stability.

- Nurses should understand that prolonged supine position may contribute to the shoulder retraction, neck hyper extension and abducted extremely rotated extremities.

- Prone position is an effective intervention for improving oxygen saturation for the neonates.

- The prone position should be carefully monitored, particularly to avoid damage to the intravenous tubes or central catheters during manipulation of the neonate.

- The Nurse should understand that goals of postural support are therefore multidimensional.

- To prevent abducted, rotated postures of shoulders and hips and flattening of the head.

- To prevent pressure damage from persistent stereotypical or favoured positions.

- To promote mobility and motor systems stability and development.

- Nurses are the holistic care providers. The nurses can work in collaboration with other health team members for providing postural support to the newborns. Good communication skills and opportunities for interaction between the nursing personnel and the family members can be enhanced as the family members need to be provided with adequate informational needs.

- Hence as nurses we need to follow cost containment methods in improving the quality of nursing care.

Nursing Education

- The study had clearly proved that the prone position was very effective for newborns under oxygen therapy.

- To practice this, the nursing personnel need to be equipped with adequate knowledge regarding the postural support for newborns.

- In order to fully utilize developmental knowledge, it is essential to incorporate theoretical concepts and practical skills into the model of care.

- This will ensure that experienced practitioners convey their values to less experienced team members, and developmental practice is regarded as an essential component of neonatal nursing care.

- In-service education programme and staff development programme can be conducted for the nurses and the nursing students.

Nursing Research

- The study will be a valuable reference material for further researchers.

- The findings of the study will help to expand the scientific knowledge upon which further research can be conducted.

- Large scale studies can be conducted in consideration with contributing values.

- Nursing researcher can encourage clinical nurse to apply the research findings in their daily nursing care activities.

- Dissemination of findings through conference, professional journals will make the application of research findings too effective on Evidence based practice.

Nursing administration

- The nurse administrator should prepare the standard protocol for the application of the procedure.

- The number of staffs in Neonatal ward must be increased so that they involve in evidence based practices and monitor the baby continuously.

- The staff should be educated by in-service education programme and staff development programme to update their knowledge and acquire special skills in practicing care.

RECOMMENDATIONS

- The study recommends the following suggestions for further research.

- A Similar study can be replicated on a large sample.

- A study can be conducted in various positions such as supine, lateral and prone positions with the single subject.

- A comparative study can be done for different positions.

- A similar study can be undertaken by using only preterm babies.

- A similar study can be conducted by using cross over design.

- A study can be conducted to investigate the effect of positioning on gastro esophageal reflux, growth and neuro motor development.

- A study can be done for newborns under mechanical ventilator.

LIMITATIONS

- The study was limited to Neonatal intensive care unit in ,Chennai.
- Neonates above 28 weeks to37 weeks of gestation were only selected for the study
- Continuous monitoring was interrupted due to intensive care procedures which made assessment quiet difficult.
- The newborns who received same oxygen concentration for the two days only were included in the study.

REFERENCES

BOOKS

1. AnigraceKalamathi,(2006) **Nurses guide to Neonatal procedures**, first edition, Jaypee brothers, Delhi.

2. Ashwillwellerjean,droskecolvertsusan,(1997) **Nursing care of children**: **Principles and practice**, W.B. Saunders, Philadelphia.

3. Basavanthappa B.T, (2009). **Nursing Research**.Fourth Edition.Newdelhi: Jaypee Brothers.

4. Basavanthappa B.T, (2009). **Nursing Theories**, Second Edition.Newdelhi: Jaypee Brothers.

5. Behraman, Richard K etal, (2009). **Nelson, Textbook OfPediatrics**, Nineteenth Edition. Philadelphia: W.B.Saunderscompany.

6. Fawcett Jacquilline, (1989), **Analysis And Evaluation Of Conceptual Model Of Nursing,** First Edition. Philadelphia :F.A.Davis

7. Ghai,O.P,(2009). **Essential pediatrics**, 7th edition. New Delhi: CBS publishers.

8. Gulanick ,puzas , (1992) **Nursing care plans for newborns and children Acute and critical care**, Mosby year book, St.Louis.

9. Gupta piyush , (2004), **Essential Pediatric Nursing**, first edition, A.P.jain&co new delhi

10.Kothari,C.R,(1988**). Research Methodology Methods And Techniques**. First edition. Wheiy eastern LTD.

11.Kray A.J. & Morgan, (1974) **Care of the newly born infant**, fifth edition, edinburgh.

12.Marlow Dorothy R, Barbara, (1998). **Redding, Textbook OfPediatric Nursing**.sixth edition. Philadelphia: Saunders

13.McMilan J.H., Schumacher, (1989). **Research In Education Conceptual I**ntroduction .Newyork: Harper Collies.

14.Meharbansingh, (1999) **Care of the newborn**, fifth edition, Newdelhi.

15.Nancy Burns etal,(2005). **The practice of nursing research.**Fifth Edition. Philadelphia: Elsevier publications

16.Parthasarathy,(2009). **IAP Textbook Of Pediatrics**. Seventh edition. Newdelhi: Orient Longmann

17.ParulDatta,(2009).**Textbook of Pediatric Nursing.** second edition. Newdelhi: Jaypee publications.

18.Rang (1981), **Manual of newborn care plans**, Little Braunn company, Boston.

19.Srivatsava , (1990), **Paediatric and neonatal emergencies**, Indian academic of paediatrics, Newdelhi.

20.Verklan , (2004), **Core curriculum for Neonatal intensive care Nursing**, third edition, Elsevier company.

21.Wong Donna ,(2001) **Wong's Essential of paediatric Nursing**, sixth edition, Mosby's and co

JOURNALS

1. AIS.H, (1996), Earliest Intervention for preterm infants in the NICU, Baltimore Brookes publishing.

2. Albert, RK, Hubmayr, RD(2000) The prone position eliminates compression of the lungs by the heart. Am J RespirCrit Care Med **;**161,1660-1665

3. Antunes LC, Rugolo LM, Crocci AJ,(2003), Effect of preterm infant position on weaning from mechanical ventilation. J Pediatr (Rio J) volume 79: 239-244.

4. Askie LM, Henderson-Smart DJ (2003) Oxygens aturation targets and outcomes in extremely preterm infants. *NEJM* 2003;349(10):959–67.

5. Balaguer A, Escribano J, (2009), Infant Position in neonates receiving Mechanical ventilation, Cochrane collaboration , Wiley Publishers, Issue 2.

6. Bhat RY, Hannam S, Pressler R, Rafferty GF, Peacock JL, Greenough A(2006). Effect of prone and supine position on sleep, apneas, and arousal in preterm infants. Volume ; 118(1): 101-7.

7. Bhat RY. et.al., (2003) , Effect of posture on oxygenation, lung volume, and respiratory mechanics in premature infants studied before discharge, Children Nationwide Regional Neonatal Intensive Care Centre, Kings College Hospital, London, United Kingdom.

8. Bhuta T, Henderson-Smart DJ(2001). Elective high frequency jet ventilation versus conventional ventilation for respiratory distress syndrome in preterm infants (Cochrane Review). In: The Cochrane Library, Issue 4, . Oxford: Update Software.

9. Bjornson .K, Blackburn S, (2000), The effect of body position on the oxygen saturation of ventilated preterm infants; Volume 4: 109-115.

10. Bruno F, Piva JP, Garcia PC, Einloft P, Fiori R, Barreto SM(2001). Short-term effects of prone positioning on the oxygenation of pediatric patients submitted to mechanical ventilation. J Pediatr (Rio J); vol. 77(5): 361-8

10 Chang YJ, Anderson GC, Dowling D, (2002) , Decreased activity and oxygen desaturation in prone ventilated preterm infants during the first post natal week, Volume 31: 34-42.

11. Christian F poets, Anette von Bodman, (2007), Placing preterm infants first prone then supine; Department of Neonatology, University Hospital; Germany; Volume 92: 331-332.

12. Cooper evans.J, (1991), Incidence of hypoxemia associated with caregiving in premature infants, Neonatal network.

13. Curley MA, Thompson JE, Arnold JH.(2000) The effects of early and repeated prone positioning in pediatric patients with acute lung injury. Chest ;118:156-63.

14. Dimitriou G, Greenough A, Pink L, McGhee A, RaffertyGF,(2002) ,Effect of posture on oxygenation and respiratory muscle strength in convalescent infants. Arch Dis Child, Volume 86:147-50.

15. Elder DE, Campbell AJ, Doherty DA, (2005), Prone or supine for infants with chronic lung disease at neonatal discharge? J Paediatr Child Health. ;41:180-5.

16. Fay.M.J, (1988), The positive effects of positioning, Neonatal Network.

17. Galland BC, Taylor BJ, Bolton DP, (2002), Prone versus supine sleep position: a review of the physiological studies in SIDS research, Department of Women's & Children's Health, Otago Medical School, Dunedin, New Zealand, Volume 38: 334-345.

18. Gattinoni L, Tognoni G, Pesenti A, Taccone P, Mascheroni D, Labarta V, Malacrida R, Di Giulio P, Fumagalli R, Pelosi P, Brazzi L, Latini R.(2001) Effect of prone positioning on the survival of patients with acute respiratory failure. Engl J Med ;345:568-73.

19. Gaynon, MW, Stevenson DK, Sunshine P (1997) Supplemental oxygen may decrease progression of prethreshold disease to threshold retinopathy of prematurity. *Journal of Perinatology*; volume 17:434–8.

20. Heimler R, Langlois J, Hodel DJ, Nelin LD, Sasidharan P. Effect of positioning on the breathing pattern of preterm infants. Arch Dis Child 1992;67:312–314.

21. Jaroenswat P, (2001), The effects of positioning on oxygenation and sleep state in preterm infants. Chiang Mai Bull. 2001;40(2):53-60.

22. Keene DJ, WimmerJr JE, Mathew OP, (2000) Does supine positioning increaseapnea, bradycardia, and desaturation in preterm infant, Volume 28:143- 156.

23. Kurlak LO, Ruggins NR, Stephenson TJ, (1994), Effect of nursing position on incidence, type, and duration of clinically significant apnoea in preterm infants. Arch Dis Child 1994;71:F16–F19.

24. Lioy J, Manginello FP. A(1988), comparison of prone and supine positioning in the immediate postextubation period of neonates. J Pedriatr. Volume 112(6):982-4.

25. Martin RJ, Herrell N, Rubin D, Fanaroff A, (1979) , Effect of supine and

prone positions on arterial oxygen tension in the preterm infant Pediatrics.

26. Maynard V, Bignall S, Kitchen S, (2000) Effect of positioning on respiratory synchrony in non-ventilated pre-term infants. Physiotherapy Volume ;5(2):96-110.

27. Mure, M, Domino, KB, Lindahl, SGE, et al (2000) Regional ventilationperfusion distribution is more uniform in the prone position. J ApplPhysiol **;**88,1076-1083

28. Nakos, G, Tsangaris, I, Kostanti, E, et al (2000)Effect of the prone position

on patients with hydrostatic pulmonary edema compared with patients with acute respiratory distress syndrome and pulmonary fibrosis. Am J RespirCrit Care Med**;** volume 161,360-368

29. Peter .K.L. (2002) , Does routine nursing care complicate the physiologic status of the premature neonate with RDS, Journal of perinatal and neonatal Nursing, Volume 58 : 45-62.

30. Poets A, Urschitz MS, Poets CF.(2009) Intermittent hypoxia in supine versus side position in term neonates. Pediatric respiration; 65(6): 654-6.

31. Saiki T, Rao H, (2008), Sleeping position, oxygenation and lung function in prematurely born infants studied post term , King's College Hospital, Denmark Hill, London SE5 9RS, UK, Volume 94: 133-137.

32. Salman Yazdi N, Tatar pour P, Hosseini F.(2001) Oxygen saturation of arterial blood of premature infants suffering from respiratory distress syndrome in prone position and open the vault. Iran Journal of Nursing ; 14(29): 45-50.

33. Ward,(2002) NS Effects of prone position ventilation in ARDS: an evidencebased review of the literature. Crit Care Clin;volume 18,35-44

34. Wolfson MR, Greenspan JS, Deoras KS, Allen JL, Shaffer TH, (1992), Effect of position on the mechanical interaction between the rib cage and in abdomen preterm infants. Volume ;72:1032- 1038.

35. Yao WX, Xue XD, Fu JH.(2008); Effect of position on oxygenation in neonates after weaning from mechanical ventilation. Zhongguo Dang Dai Er Ke;volume 10(2): 121-4.

36. Yong-Chuan Chen, RN, MS, (2007), The effectiveness of prone position on physiological parameters in preterm infants, Poster presentation.

INTERNET REFERENCES

1. www.afmc- centrallibrary@yahoo.co.uk.

2. http://emedicine.medscape.com

3. www.cochrane.com.

4. http:// www.globalforumhealth.org.files.

5. www.google.com

6. www.google scholar.com.

7. http:// www.Icmr.nic.in.

8. http:// www.medlineplus.com

9. www. National Neonatology Forum of India and Save the Children, New Delhi.

10. www.pubmed.com

11. http://www.pulmonary medicine.com

12. http://www.sciencedirect.com.

13. www.wikipedia.com

14. http: www. WHO bulletin.com.

15. Www.yahoo.co.in

ANNEXURE –I

LETTER SEEKING PERMISSION TO CONDUCT STUDY

From

301617553
II year M.Sc Nursing (Child Health Nursing),
Sresakthimayeil Institute of Nursing & Research,
(JKK Nattraja Educational Institutions)
Komarapalayam P.O,Namakkal Dt.

Forwarded through

The Principal
Sresakthimayeil Institute of Nursing & Research,
(JKK Nattraja Educational Institutions)
Komarapalayam P.O), Namakkal Dt.

Respected Sir,

Sub : Permission to conduct study - Regarding

I am M.Sc. (Child Health Nursing) II year student of Sresakthimayeil Institute of Nursing and Research. As a partial fulfillment of Master of Science in Nursing, I am going to conduct a research and submit the dissertation work to the Tamil Nadu Dr. M.G.R. Medical University, Chennai by October 2018.

The statement of the problem chosen for my study is **"A STUDY TO ASSESS THE EFFECTIVENESS OF PRONE POSITION ON OXYGEN SATURATION AMONG PRETERM BABIES IN SELECTED HOSPITAL, CHENNAI, TAMILNADU".**

I request you to permit me to conduct the proposed study under your jurisdiction and provide the necessary facilities for the study. Kindly do the needful.

Thanking you in anticipation,

Yours Faithfully,

(301617553)

PRINCIPAL
SRESAKTHIMAYEIL INSTITUTE OF
NURSING AND RESEARCH
KOMARAPALAYAM - 638 183.

SRESAKTHIMAYEIL INSTITUTE OF NURSING AND RESEARCH * KOMARAPALAYAM-638183 *

ANNEXURE – II

LETTER GRANTING PERMISSION TO CONDUCT STUDY

From,

301617553
II year M.Sc Nursing (Mental Health Nursing),
Sresakthimayeil Institute of Nursing & Research,
(JKK Nattraja Educational Institutions)
Komarapalayam P.O,Namakkal Dt.

PRINCIPAL
SRESAKTHIMAYEIL INSTITUTE OF
NURSING AND RESEARCH
KOMARAPALAYAM - 638 183.

Forwarded through,
The Principal
To,

The Director of Medical Services,
SRM Institutes for Medical Science,
Chennai.

Respected Sir,

Sub: M.Sc., (Nursing) student – research – data collection – regarding.

301617553 is a II year M.Sc. Nursing student of Sresakthimyeil Institute of Nursing and Research. As a partial fulfillment of Master of Science in Nursing, I am going to conduct a research and submit the dissertation work to the Tamil Nadu Dr.M.G.R. Medical University, Chennai by October 2018.

The statement of the problem chosen for my study is **"A STUDY TO ASSESS THE EFFECTIVENESS OF PRONE POSITION ON OXYGEN SATURATION AMONG PRETERM BABIES IN SELECTED HOSPITAL, CHENNAI, TAMILNADU"**.

I request you to permit me to collect the data from your hospital. I assure you that I will not in any way affect the routine work of your hospital nor would it harm the study subjects.

Kindly do the needful.
Thanking you,

Yours sincerely,
301617553
Sresakthimayeil Institute of
Nursing and Research.
Kumarapalayam, Namakkal (Dt).

Dr. E. PADMAPRIYA,
MBBS,DCH,DNB(Pediatrics) MNAMS,
Neonatal Training(australia)
Senior Consultant- Neonatology
Reg. No. 44268
SRM Institutes for Medical Science
Vadapalani, Chennai - 600 026.

ANNEXURE – III

LETTER REQUESTING FOR OPINION & SUGGESTIONS OF EXPERTS FOR CONTENT AND TOOL VALIDATION

From

301617553
II year M.Sc Nursing (Child Health Nursing),
Sresakthimayeil Institute of Nursing & Research,
(JKK Nattraja Educational Institutions)
Komarapalayam P.O,Namakkal Dt.

Forwarded through

The Principal
Sresakthimayeil Institute of Nursing & Research,
(JKK Nattraja Educational Institutions)
Komarapalayam P.O), Namakkal Dt.

Respected Sir/Madam,

Subject: Request for Expert Opinion and Suggestion to establish validation of Content and Research Tool

I am a final year M.Sc Nursing student of Sresakthimayeil Institute of Nursing & Research, (JKK Nattraja Educational Institutions), Komarapalayam,have selected the topic on **"A STUDY TO ASSESS THE EFFECTIVENESS OF PRONE POSITION ON OXYGEN SATURATION AMONG PRETERM BABIES IN SELECTED HOSPITAL, CHENNAI, TAMILNADU"** as a partial fulfillment of M.Sc (N) programme, which has to be submitted to the Tamil Nadu Dr.M.G.R Medical University.

The prepared study tool is enclosed so I humbly request you to go through and give your valuable suggestions, modification and opinions. Kindly do the needful.

Thanking you in anticipation.

PRINCIPAL
SRESAKTHIMAYEIL INSTITUTE OF
NURSING AND RESEARCH
KOMARAPALAYAM - 638 183

SRESAKTHIMAYEIL INSTITUTE OF NURSING AND RESEARCH
KOMARAPALAYAM-638183

Yours faithfully

301617553

ANNEXURE – IV

LIST OF EXPERTS

1. **Dr. Mrs. R. Jamuna Rani, M.Sc. (Nursing), Ph.D,**
   Principal,
   Sresakthimayeil Institute of Nursing and Research,
   (J.K.K.N. Educational Institutions)
   Kumarapalayam.

2. **Prof. Mrs. P. Beulah, M.Sc., (N)., PGDSH,**
   HOD, Child Health Nursing,
   Sresakthimayeil Institute of Nursing and Research,
   Kumarapalayam.

3. **Dr.E.Padmapriya, MBBS, DCH, DNB (Pediatrics), MNAMS,**
   Senior Consultant – Neonatology,
   SRM Institutes for Medical Science,
   Chennai.

4. **Dr.G.Maheswari, M.Sc., (N), Ph.D.,**
   Professor cum HOD – Child Health Nursing,
   Dhanvantri College of Nursing,
   Pallakkapalayam.

5. **Mrs.S.Indira, M.Sc., (N),**
   Vice Principa l,
   Anbu College of Nursing,
   Komarapalayam

6. **Prof. Mr. Dhanapal M.Sc., PGDC,**
   Statistician,
   Sresakthimayeil Institute of Nursing and Research,
   Kumarapalayam.

APPENDIX – V

CONTENT AND TOOL VALIDATION CERTIFICATE

Name : **Dr.E.PADMAPRIYA, MBBS, DCH, DNB (Pediatrics), MNAMS,**

Designation : Senior Consultant – Neonatology

Name of the hospital : SRM Institutes for Medical Science, Chennai.

I hereby certify that I have validated the tool of **301617553-** II year M.Sc Nursing student of Child Health Nursing Department who has taken Dissertation on **"A STUDY TO ASSESS THE EFFECTIVENESS OF PRONE POSITION ON OXYGEN SATURATION AMONG PRETERM BABIES IN SELECTED HOSPITAL, CHENNAI, TAMILNADU"**

Place: Chennai.

E. Padmapriya

Signature of the expert

Dr. E. PADMAPRIYA,
MBBS,DCH,DNB(Pediatrics) MNAMS,
Neonatal Training(australia)
Senior Consultant- Neonatology
Reg. No. 44268
SRM Institutes for Medical Science
Vadapalani, Chennai - 600 026.

CONTENT AND TOOL VALIDATION CERTIFICATE

Name : **Dr.G.MAHESWARI, M.Sc., (N), Ph.D.,**

Designation : Professor cum HOD – Child Health Nursing,

Name of the college : Dhanvantri College of Nursing,
Pallakkapalayam.

I hereby certify that I have validated the tool of **301617553-** II year M.Sc Nursing student of Child Health Nursing Department who has taken Dissertation on **"A STUDY TO ASSESS THE EFFECTIVENESS OF PRONE POSITION ON OXYGEN SATURATION AMONG PRETERM BABIES IN SELECTED HOSPITAL, CHENNAI, TAMILNADU"**

Signature of the expert

CONTENT AND TOOL VALIDATION CERTIFICATE

Name : **Mrs.S.INDIRA, M.Sc., (N),**

Designation : Vice Principal,

Name of the college : Anbu College of Nursing,
Komarapalayam.

I hereby certify that I have validated the tool of **301617553-** II year M.Sc Nursing student of Child Health Nursing Department who has taken Dissertation on **"A STUDY TO ASSESS THE EFFECTIVENESS OF PRONE POSITION ON OXYGEN SATURATION AMONG PRETERM BABIES IN SELECTED HOSPITAL, CHENNAI, TAMILNADU"**

Place: Komarapalayam.

Signature of the expert

APPENDIX –VI

CERTIFICATE BY THE ENGLISH EDITOR

This is to certify that the dissertation entitled **"A STUDY TO ASSESS THE EFFECTIVENESS OF PRONE POSITION ON OXYGEN SATURATION AMONG PRETERM BABIES IN SELECTED HOSPITAL, CHENNAI, TAMILNADU"** is a bonafied research work done by **301617553,** II year M.Sc Nursing, student of Sresakthimayeil Institute of Nursing & Research, (JKK Nattraja Educational Institutions), Komarapalayam P.O, Namakkal Dt.

Mrs. L. Mary Suseela.

Signature of the Editor

APPENDIX –VII

CERTIFICATE BY THE STATISTICIAN

This is to certify that the dissertation entitled **"A STUDY TO ASSESS THE EFFECTIVENESS OF PRONE POSITION ON OXYGEN SATURATION AMONG PRETERM BABIES IN SELECTED HOSPITAL, CHENNAI, TAMILNADU"** has been statistically analyzed under the consultation and guidance of the statistician.

Signature of the Statistician

(K. DHANAPAL)

APPENDIX – VIII

QUESTIONNAIRE IN ENGLISH

TOOL FOR ASSESS THE EFFECTIVENESS OF PRONE POSITION ON OXYGEN SATURATION AMONG PRETERM BABIES

Description of the tool:

The tool to assess the effectiveness of prone position on oxygen saturation among preterm babies is divided into two parts as given below:

Part – A: This part contains 10 questions on the demographic profile of the subjects.

Part – B : Knowledge regarding structured analysis tool for assessing the physiological status

SECTION – A: DEMOGRAPHIC PROFILE

1. Gestational Age
    a. 28-30 weeks.
    b. 31-33 weeks.
    c. 34-37 weeks completed
2. Chronological Age of the child
    a. < 7 days.
    b. 7-14 days.
    c. 15-28 days.
3. Sex
    a. Male.
    b. Female.
4. Nature of Birth
    a. Normal Delivery.
    b. Caesarean section.
    c. Assisted delivery.

5. Place of delivery

a. Home .

b. Hospital.

6. Apgar Score at birth (5 min)

a. 7-10.

b. 4-6.

c. <3.

7. Weight of the Baby

a. 1000 gm – 1500 gm.

b. 1501 gm – 2000 gm.

c. 2001 gm – 2500 gm.

8. Type of Feed

a. Breast feeding

b. Intravenous fluids.

c. Naso gastric feeds.

9. Mode of oxygen delivery

a. Nasal cannula.

b. Oxygenhood.

c. Bubble C-PAP.

10. Amount of oxygen delivery:

a. room air (21%)

b. 21% - 30%

c. 31% - 40%

d. 41% - 60%

SECTION – B

STRUCTURED ANALYSIS TOOL FOR ASSESSING THE PHYSIOLOGICAL STATUS

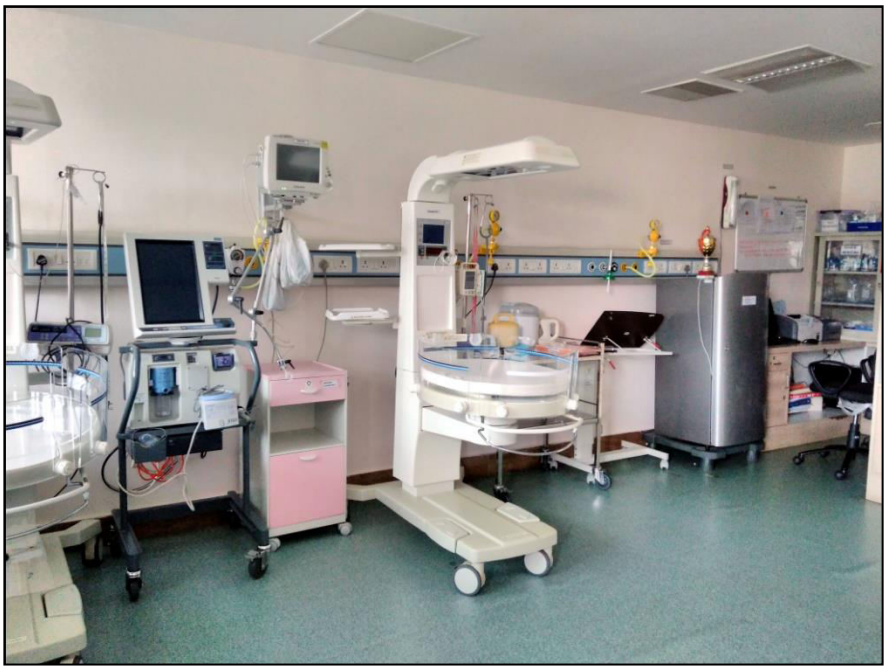
Instruction : Intervention schedule will be planned in such a way that the baby's routine care is not interrupted. Intervention interrupted on account of medical and non- medical reasons will be either, excluded for study or, re-begin the intervention for inclusion.

Position	Parameters	Observation	30min	60min	90min	120min
Supine	Heart rate	First day				
		Second day				
	Respiratory rate	First day				
		Second day				
	Oxygen saturation	First day				
		Second day				

Prone	Heart rate	First day				
		Second day				
	Respiratory rate	First day				
		Second day				
	Oxygen saturation	First day				
		Second day				

APPENDIX – IX

PHOTOGRAPHS



Certificate

Declaration

Acknowledgement

Abstract

List of Contents

List of Tables

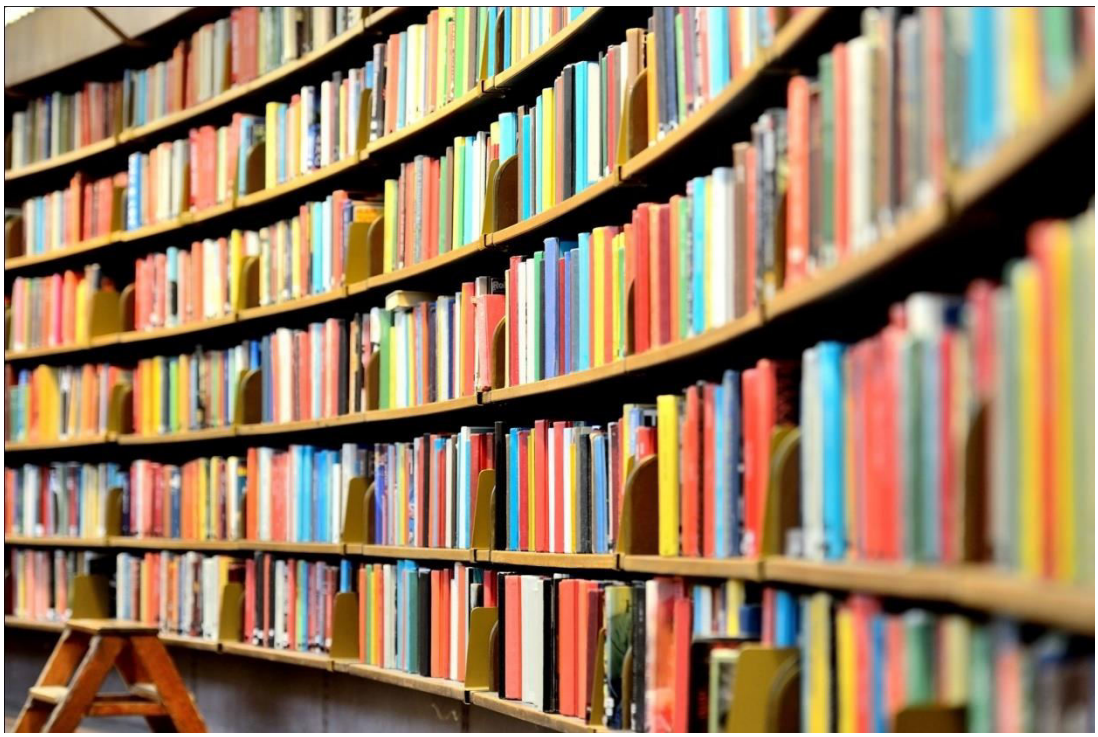
List of Figures

List of Appendices

Chapter – I

Introduction

Chapter – II



Review of Literature

Chapter – III

Research Methodology

Chapter – IV

Data Analysis & Interpretation

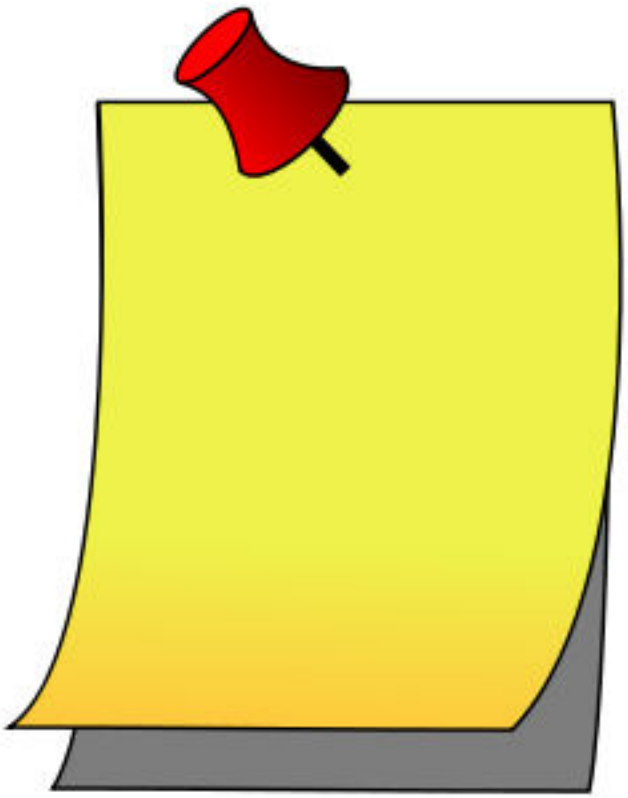
Chapter – V

Discussion

Chapter – VI

Summary, Conclusion, Implications and Recommendations

References



Appendices

Photographs

Thanking you